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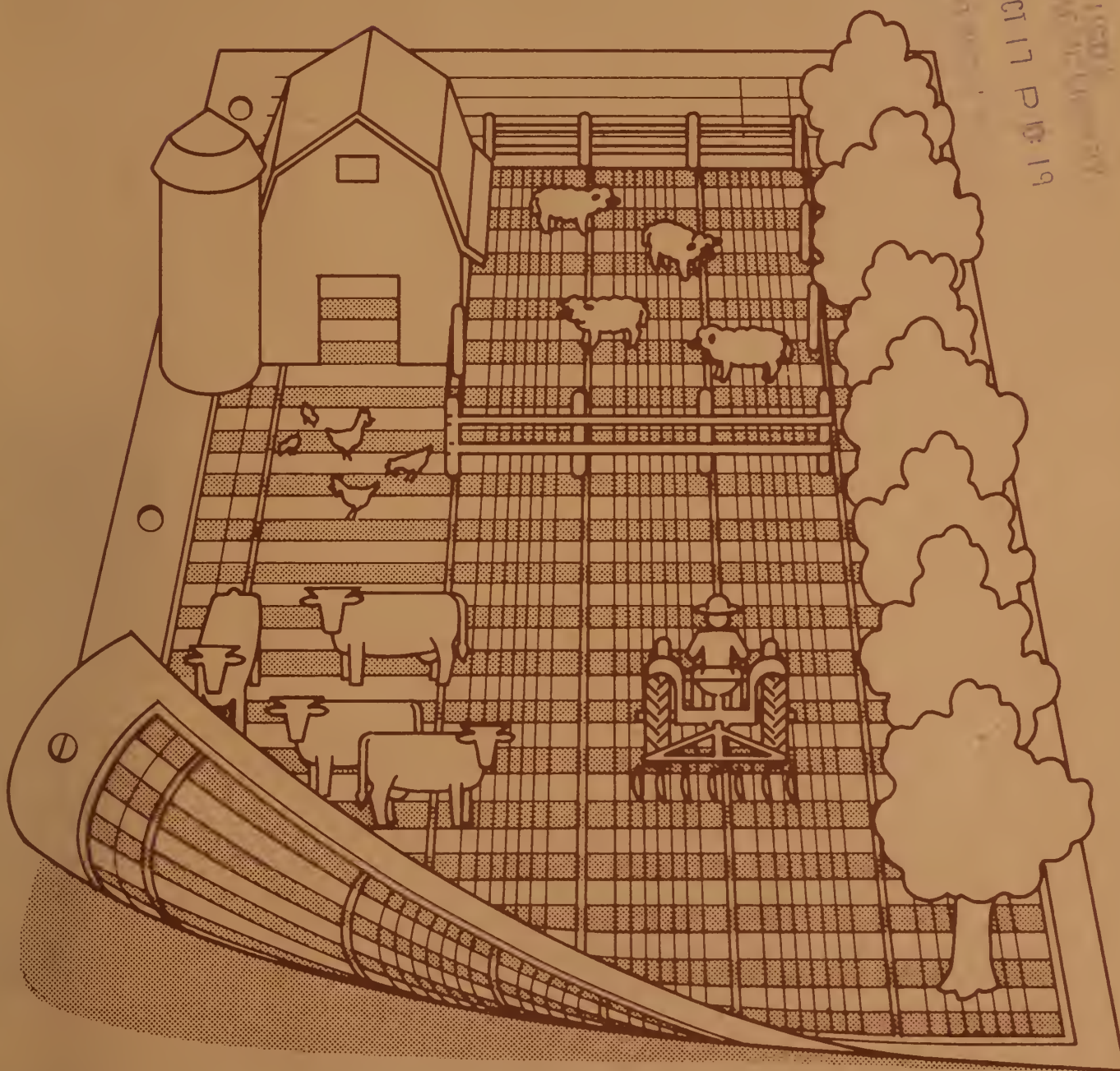
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Economic Indicators of the Farm Sector

Farm Sector Review, 1982

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ABSTRACT

Net farm income in 1982, excluding inventory change, totaled about \$20.2 billion, up from \$19.6 billion in 1981. The payment-in-kind program improves the outlook for net farm income in 1983. Farm equity, excluding farm households, declined 4 percent to \$770 billion as of January 1, 1983. In response to declining cash income, farmers are refinancing expensive short-term debt with lower cost Federal land bank loans and are reducing machinery purchases. The U.S. food and fiber sector accounted for 20 percent of gross national product in 1981 and 22 percent of total U.S. employment.

Keywords: Net farm income, costs of production, capital flows, balance sheet, cash flow, savings, output, productivity.

NOTE

Many 1982 farm economic series are forecasted. The empirical data are either preliminary or unavailable at time of publishing.

SALES INFORMATION

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PREFACE

Three sectors--farm input, farm production, and food marketing--make up the food and fiber system. The U.S. Department of Agriculture (USDA) monitors agricultural production, income, capital formation, and efficiency through its farm sector accounts. The USDA marketing bill account monitors the distribution of the consumer's food dollar.

Many of the USDA economic accounts are also used by the U.S. Department of Commerce to estimate the State and regional personal income series, the national income and product accounts, and the national input-output table.

This is one of five reports in the Economic Indicators of the Farm Sector series. Other reports are Income and Balance Sheet Statistics, State Income and Balance Sheet Statistics, Production and Efficiency Statistics, and Costs of Production. The Farm Sector Review examines economic developments in the farm sector and contains farm income research articles emphasizing farm sector data estimating methods.

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HIGHLIGHTS

The U.S. economy remained weak in 1981 and 1982 when high interest rates prevailed. A stronger U.S. dollar raised the price of U.S. commodities for world customers, whose economies were similarly weak. Demand for agricultural products was sluggish as a result, but a slowdown in inflation reduced the rate of increase in farm input prices.

Both domestic and foreign demand for U.S. agricultural products declined in 1982. About 60 percent of farmers' cash receipts is realized from domestic food and fiber consumption, and about 22 percent is realized from exports. Domestic food consumption per capita declined 0.5 percent (7 pounds) in 1982. Although the volume of agricultural exports decreased only 6 percent, the value of U.S. agricultural exports fell 15 percent in 1982.

Depressed demand, high interest costs, moderate input price inflation, the strengthening U.S. dollar, and record farm output combined to reduce net cash farm income, squeeze cash flow, and soften farmland prices. Nevertheless, net farm income in 1982, excluding inventory change, reached about \$20.2 billion, up from \$19.6 billion in 1981, a 3-percent rise.

Farm output and productivity in 1982 likely maintained their 1981 levels. Productivity in 1981 increased 12 percent as output rose 13 percent, while input use (1977=100) remained at about 1980 levels. Although the level of inputs remained about constant, total 1981 farm production expenses increased 8.5 percent when the prices paid by farmers for production items, interest, taxes, and wages rose 8 percent. The 1982 increase in the prices paid index of about 2 percent was the smallest since 1968, but was also the third consecutive year in which prices paid rose more than prices received.

Income of farm operator families from farm and off-farm sources totaled \$66.1 billion in 1979, dropped to \$56.7 billion in 1980, rose to \$64.4 billion in 1981, and dropped again to \$61.4 billion in 1982. Off-farm income rose each year, but farm income dropped in 1980 and 1982. The per capita disposable income of the farm population in 1981 improved to 88 percent of that of the nonfarm population because of rising off-farm income and the increase in value of farm inventories. But in 1982, it fell to 80 percent. Total income per farm operator family reached \$26,458 in 1981 and was an estimated \$25,583 in 1982.

Farmers could not reduce their reliance on borrowing in 1981 because current outlays increased \$8.6 billion, and cash income from farming dropped \$5.8 billion, a spread of \$14.4 billion. As a result, farmers reduced machinery expenditures and refinanced expensive short-term debt with less expensive funds borrowed from the Federal land banks in response to declining cash farm income. These trends continued into 1982.

A 7-percent increase in debt, combined with a 2-percent decline in asset values (excluding farm households), resulted in a 4-percent equity decline in 1982. This was the second nominal

decline in the farm sector's net worth since 1954, causing the debt-to-asset ratio to reach 20 percent, the highest since 1942. Farms with sales of more than \$100,000 in 1981 carried a debt-to-asset ratio of nearly 21 percent; it ranged from 11.7 to 13.8 percent for farms with sales of less than \$10,000.

Consumers spent \$298 billion in 1982 for domestically produced food from U.S. farms. Farmers received about \$84 billion for the farm products used in these foods. Consumer expenditures for all foods increased to \$349.7 billion. But this represented a reduced share, 16.1 percent, of personal disposable income. The share was 16.3 percent 10 years ago and 19.1 percent 20 years ago.

The consumer price index (CPI) for all foods eaten at home and away from home increased only 4 percent in 1982, the third straight year of slowing retail food price rises. The CPI for foods eaten at home increased 3.4 percent, and the away-from-home component rose 5.3 percent. Since 1979, the away-from-home component has been rising faster than the at-home component. Food prices in 1982 rose the least since 1976 because of large supplies of farm commodities, weak consumer demand, and moderation in the rise of food marketing costs.

The value of U.S. farm exports dropped \$6.7 billion in calendar year 1982 to \$36.6 billion because large global crop supplies and weak demand caused prices for most of the major commodities to fall 10 to 20 percent. Export volume declined 6 percent to 152 million tons, primarily spurred by reduced corn shipments.

Economic Indicators of the Farm Sector:

Farm Sector Review, 1982

INTRODUCTION

In 1982, U.S. consumers spent nearly \$350 billion to purchase food, beverage, and other agricultural products, more than for any other category of goods and services including housing. Food products and the conditions under which they are produced, processed, distributed, and marketed influence not only the nutritional and financial well-being of the United States, but affect millions of global consumers who purchase U.S. agricultural products as well.

Three percent of the U.S. work force is directly involved in producing crop and livestock products, and another 19 percent are employed in the manufacturing, processing, transporting, and retailing industries needed to supply farmers with production inputs and to supply consumers with food and other farm related goods and services.

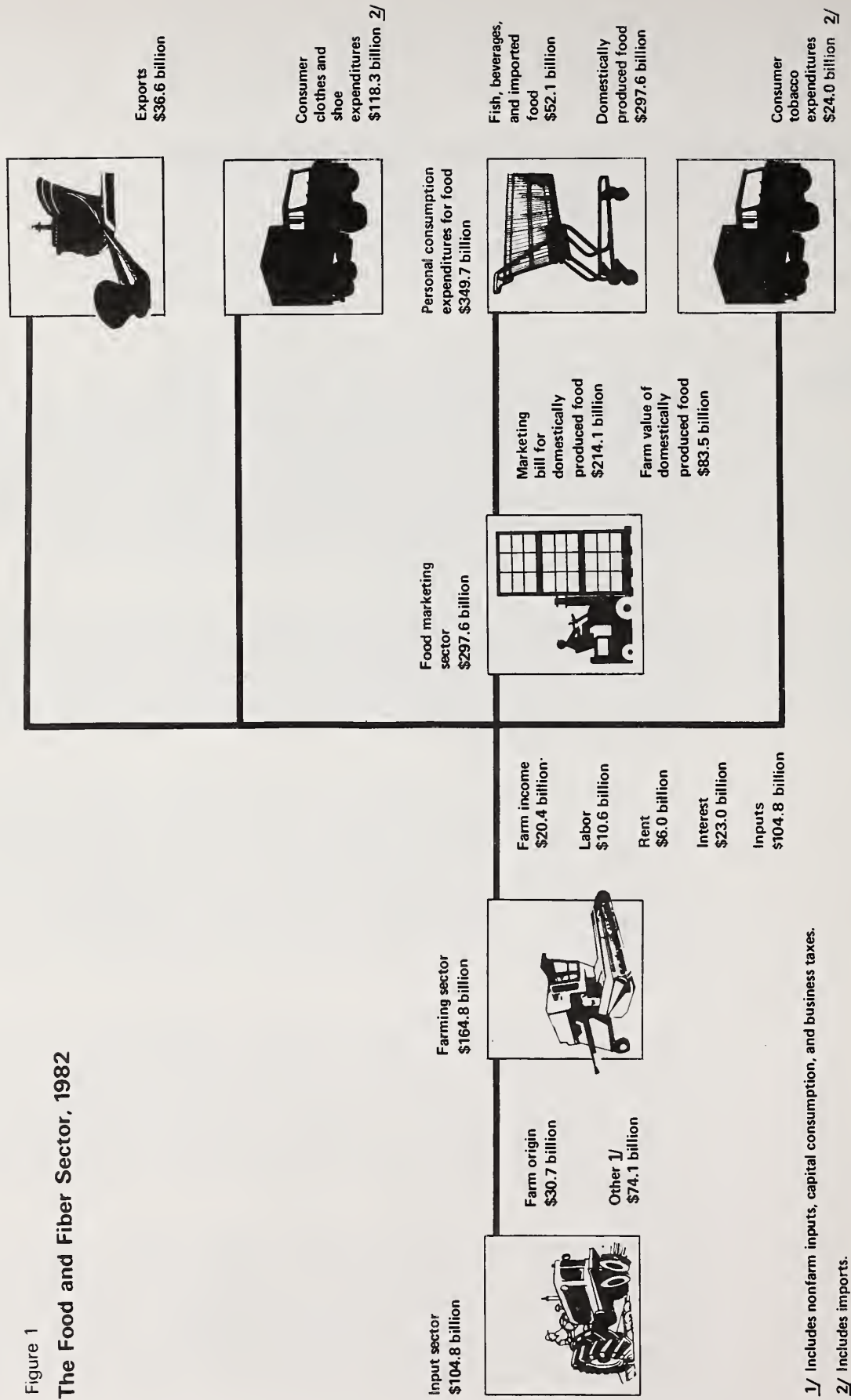
The food and fiber system is a value-added system (that is, profit, rent, interest, wages) that in many ways resembles an assembly line. Manufacturers and suppliers add value to the input products of U.S. agriculture. Farmers add value by converting farm and nonfarm inputs into raw agricultural commodities. Transporting, processing, distributing, and marketing add value by converting raw agricultural products to consumer goods.

The farm production sector is both a consumer of inputs and a producer of products, some of which, such as eggs, may be consumed without substantial processing while others, such as food grains, may be highly processed by off-farm business for final consumer purchase. As such, the farm production sector relies on both the availability and price of its production inputs and the demand for its products for domestic and foreign consumption.

The food and fiber sector produced about \$529 billion worth of goods in 1982, consisting of \$298 billion in consumer purchases of domestically produced food, \$37 billion of agricultural exports, \$118 billion of clothes and shoes, and \$24 billion of tobacco (fig. 1). Farmers purchased \$105 billion of inputs comprised of \$31 billion of farm-origin inputs and \$74 billion

Figure 1

The Food and Fiber Sector, 1982



1/ Includes nonfarm inputs, capital consumption, and business taxes.

2/ Includes imports.

from the farm input sector. Food processors and marketers purchased \$84 billion of raw agricultural commodities in 1982. Processing and distributing raw agricultural commodities cost another \$214 billion. Food processing and marketing profits before taxes in 1982 equaled 4.4 percent of food expenditures.

The continuing cost-price squeeze pushed net cash farm income, excluding net Commodity Credit Corporation (CCC) loans, down 18 percent to \$24.2 billion in 1982 (table 1). Per capita disposable income of the farm population, which includes off-farm income and the imputed rental value of operators' dwellings, is estimated at 80 percent of the per capita disposable income of the nonfarm population in 1982. Off-farm income exceeded farm returns to operators for about 88 percent of all farm families in 1981 (table 2). Total income of farm operator families from farm and off-farm sources in 1982 is estimated at \$61.4 billion, or \$25,583 per farm family (figs. 2 and 3).

An unusually volatile net farm inventory fluctuated from \$5.6 billion in 1979 to a minus \$4.3 billion in 1980 and up again to \$5.5 billion in 1981. The \$9.8-billion spread in inventory values between 1980 and 1981 accounted for much of the variation between 1980 and 1981 net farm income. After inventory adjustment, net farm income in 1981 totaled \$25.1 billion, a 25-percent increase from 1980 (table 1). Before inventory adjustment, net farm income in 1981 was \$19.6 billion, down about 20 percent from 1980. These two measures have diverged

Figure 2
Income from Farming

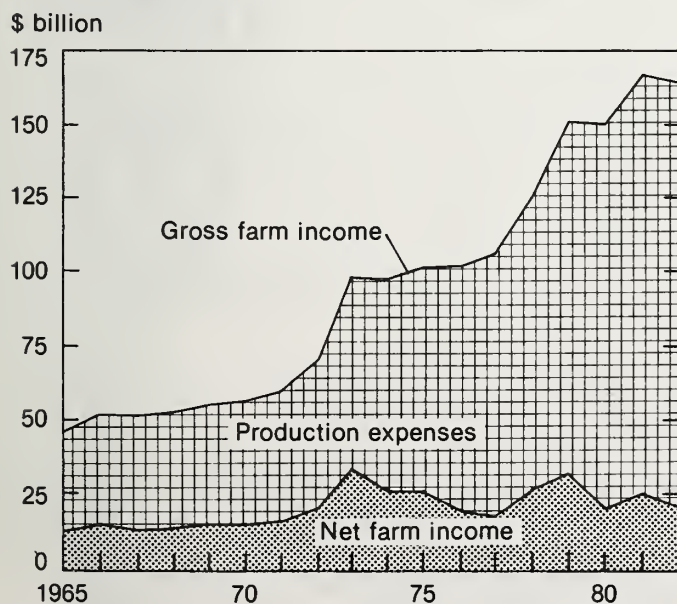


Figure 3
Income of Farm Operator Families

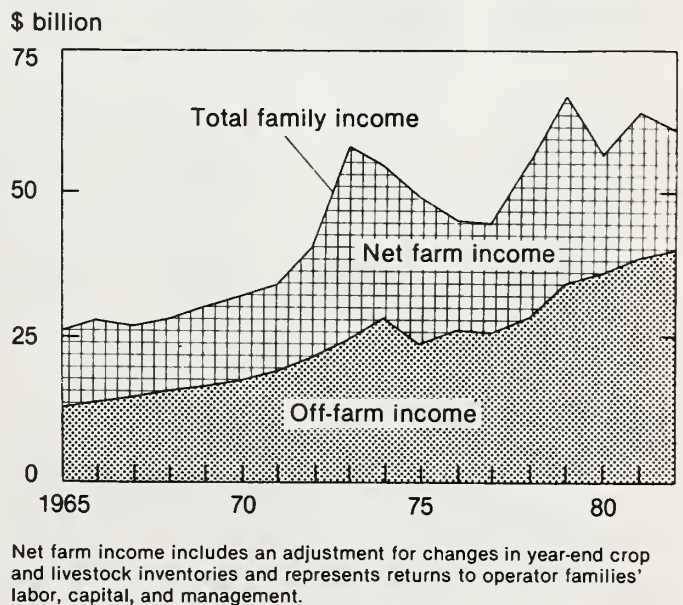


Table 1--Economic indicators of the farm sector, 1977-83

Economic indicator	1977	1978	1979	1980	1981	1982	1983
	<u>Thousands</u>						
Farms	2,456	2,436	2,430	2,428	2,436	2,400	--
	<u>Million dollars</u>						<u>Billion dollars</u>
Income summary:							
Net farm income of operators ^{1/}							
Including inventory change	18,434	26,655	32,347	20,125	25,117	20,400f	18-22f
Excluding inventory change	17,463	25,584	26,734	24,417	19,589	20,200f	20-24f
Total operator income ^{1/}	44,057	55,376	66,129	56,694	64,446	61,400f	61-65f
Farm sources	18,434	26,655	32,347	20,125	25,117	20,400f	18-22f
Returns to operators ^{2/}	14,265	22,031	26,721	13,561	17,663	12,500f	10-14f
Imputed net rental value of operator dwellings	3,552	3,972	4,506	5,791	6,575	7,100f	7-8f
Net rent to operator landlords	616	652	721	773	879	800f	.7-.9f
Off-farm sources	25,623	28,721	33,782	36,569	35,329	41,000f	41-45f
Disposable personal income of the farm population	32,730	41,313	46,595	39,927	44,696	42,360f	42-46f
Proprietors' net cash farm income ^{2/}	31,234	40,747	44,034	41,836	36,919	31,000f	38-42f
Cash income from farming of operators	26,065	35,264	37,973	35,328	29,514	24,200f	32-36f
Net rent to all landlords	5,165	5,483	6,061	6,510	7,405	6,800f	6-8f
Net cash flow ^{3/}	28,695	38,855	44,579	38,516	37,589	33,400f	26-30f
Capital gains ^{2/}	64,461	121,405	114,409	75,575	-9,316	N/A	N/A
	<u>Dollars</u>						
Income per operator ^{1/}	17,535	22,730	27,214	23,352	26,458	25,583f	N/A
From farm sources ^{1/}	7,506	10,941	13,312	8,289	10,312	8,500f	N/A
Off-farm sources	10,433	11,789	13,902	15,062	16,146	17,083f	N/A
Deflated income per operator ^{1/} , ^{4/}	9,884	11,634	12,518	9,461	9,712	8,845f	N/A
From farm sources ^{1/}	4,136	5,600	6,123	3,359	3,785	2,940f	N/A
Off-farm sources	5,748	6,034	6,395	6,102	5,927	5,905f	N/A
	<u>Million dollars</u>						
Financial summary: ^{2/}							
Assets, January 1	589,698	655,307	781,785	904,600	983,264	983,597	963,500f
Debt (including CCC loans), January 1	95,448	111,254	127,208	147,481	163,132	181,582	193,600f
Equity, January 1	494,250	544,053	654,577	757,119	820,132	802,015	770,300f
Change during year in--							
Farm assets	65,605	126,478	122,815	78,665	333	-19,657f	N/A
Farm debts	15,806	15,954	20,273	15,651	18,450	12,018f	N/A
Farm equity	49,803	110,524	102,542	63,014	-18,117	-31,715f	N/A
	<u>Percent</u>						
Ratio analysis: ^{2/}							
Disposable personal income per capita, farm population as a percentage of nonfarm population, all sources	85	97	102	83	88	80	N/A
Prices received to prices paid	100	106	107	97	92	85	N/A
Debts to assets	16	17	16	16	17	18	20f
Returns to equity in farm assets	15.0	25.5	20.9	11.8	.6	N/A	N/A
From residual income	2.0	3.2	3.4	1.3	1.7	N/A	N/A
From nominal capital gains	13.0	22.3	17.5	10.5	-1.1	N/A	N/A
Proprietors' net cash farm income as a percentage of total debt outstanding	33	32	35	28	23	17	N/A
Net change in loans outstanding as a percentage of proprietors' net cash farm income	51	39	46	37	50	39	N/A
Capital expenditures as a percentage of proprietors' net cash farm income	48	44	45	44	48	44	N/A

-- = not applicable.

N/A = not available.

f = forecast.

^{1/} Includes farm households. ^{2/} Excludes farm households. ^{3/} Cash income from farming plus net change in loans outstanding, net change in farmers' currency and demand deposits, and net rent to all landlords less capital expenditures. Excludes farm households.^{4/} Deflated by the consumer price index, 1967=100.

Table 2--Summary of the farm sector's income status, by value of sales class, 1978-81

Item	1978	1979	1980	1981
	<u>Dollars</u>			
Disposable personal income per capita:				
Farm population, all sources	6,355	7,466	6,598	7,720
Nonfarm population, all sources	6,579	7,290	8,040	8,880
	<u>Percent</u>			
Disposable personal income per capita,				
Farm population as a percentage				
of nonfarm population, all sources	97	102	83	88
Returns to operators per farm				
operator family: <u>1/</u>	<u>Dollars</u>			
Large-scale farms with sales of--				
\$200,000 and over	186,909	189,879	139,657	169,295
\$100,000 to \$199,999	34,659	33,389	14,900	17,065
All large-scale farms	89,958	91,632	61,684	74,279
Medium-scale farms with sales of--				
\$40,000 to \$99,999	13,360	12,263	2,717	3,049
\$20,000 to \$39,999	3,476	2,456	-2,337	-2,579
\$10,000 to \$19,999	485	-229	-2,780	-3,010
All medium-scale farms	6,203	5,540	-409	-387
Small-scale farms with sales of--				
\$5,000 to \$9,999	-1,146	-1,612	-3,287	-3,275
Less than \$5,000	-2,539	-2,677	-3,033	-3,558
All small-scale farms	-2,198	-2,391	-3,216	-3,477
All farms	9,044	10,995	5,585	7,251
Total income per farm operator family:				
Large-scale farms				
Farm sources <u>2/</u>	93,373	95,684	66,385	79,614
Off-farm income	10,033	11,643	12,840	13,772
Total income	103,406	107,327	79,225	93,386
Medium-scale farms				
Farm sources <u>2/</u>	8,132	7,846	2,259	2,619
Off-farm income	7,809	9,174	9,940	10,645
Total income	15,941	17,020	12,199	13,264
Small-scale farms				
Farm sources <u>2/</u>	-570	-447	-969	-949
Off-farm income	14,961	18,082	19,720	21,227
Total income	14,391	17,635	18,751	20,278
All farms				
Farm sources <u>2/</u>	10,941	13,312	8,289	10,312
Off-farm income	11,789	13,902	15,062	16,146
Total income	22,730	27,214	23,352	26,458
	<u>Percent</u>			
Percentage of farmers with off-farm income				
larger than returns to operators	77	74	88	88

1/ In the 1978 Census of Agriculture, 92 percent of large-scale farms, 76 percent of medium-scale farms, and 30 percent of small-scale farms reported farming as their primary occupation. 2/ Income from farm sources includes returns to operators, the imputed net rental value of operator dwellings, and net rent paid to operator landlords.

before (the last time was in 1971), but the difference was never so pronounced as in 1981, when a bumper crop increased crop inventories depleted by 1980's drought.

Total net farm income after inventory adjustment equals all income from farm sources, including returns to operators, net rent paid to operator landlords, and the imputed net rental value of operator dwellings. Returns to operators in 1982 are projected at \$12.5 billion, or 61 percent of the income from farm sources; net rent paid to operator landlords totaled \$800 million, or 4 percent of the income from farm sources; the imputed net rental value of operator dwellings was \$7.1 billion, or 35 percent of the income from farm sources.

Aggregate farm income statistics provide useful indicators of income and financial trends. However, aggregate data of income and the financial circumstances of individual farmers may vary substantially. Table 2 highlights the different income and financial conditions faced by large, medium, and small farms using primary occupation data collected in the 1978 Census of Agriculture. Large farms had sales of agricultural products of \$100,000 or more; medium farms had sales of \$10,000 to \$99,999; and small farms had sales of less than \$10,000. In 1978, 92 percent, 76 percent, and 30 percent of large, medium, and small farmers reported farming as their primary occupation.

In 1981, returns to operators of large farms reached \$74,279. But these farming returns were negative for other classes: minus \$387 per farm for medium farms, and minus \$3,479 for small farms (table 2). Off-farm income of farm families operating small farms was \$21,227 per farm compared with \$12,864 for farm families operating medium and large farms. Off-farm income provided 15 percent of large-scale farmer total income. Farm families operating medium-size farms had the lowest total income because their incomes from both farm and nonfarm sources were low. Small farms, although constituting 48 percent of total farms, sold only 6.5 percent of the agricultural products in 1981 (table 3). Large and medium farms accounted for 94 percent of cash receipts.

GENERAL ECONOMIC DEVELOPMENTS

Domestic demand for U.S. farm products depends largely on consumers' disposable incomes. Incomes, in turn, are generated by economic growth and employment. Thus, when the economy slows and unemployment rises, demand for farm products weakens, causing farm cash receipts to drop. When the U.S. economy grows, demand for imports increases, causing stronger economic growth in other countries that export to the United States. In turn, when foreign economies expand, demand for U.S. agricultural exports also increases.

The U.S. economy, struggling since 1979, remained weak in 1981 and 1982 when a recovery from 1980 was choked off by high interest rates. This caused the economy to deteriorate through 1982 (fig. 4). Real gross national product (GNP) in the fourth

Table 3--Off-farm income as a percentage of total farm operator family income, by value of sales class, 1981

Item	\$500,000 and over	\$200,000 to \$499,999	\$100,000 to \$199,999	\$100,000 and over	\$40,000 to \$99,999	\$20,000 to \$39,999	\$10,000 to \$19,999	\$5,000 to \$9,999	\$2,500 to \$4,999	Less than \$2,500	All farms
Total farms: Farms	25	87	186	258	396	278	286	335	332	511	2,436
	<u>Thousands</u>										
	<u>Million dollars</u>										
Cash receipts	44,727	27,856	28,150	100,733	27,983	9,042	4,686	2,778	1,389	721	147,332
Net farm income ^{1/}	12,978	3,983	2,949	19,910	1,509	-244	-292	-331	-462	-501	19,589
Off-farm income	N/A	N/A	N/A	4,104	3,383	2,826	4,010	6,170	7,377	11,459	39,329
Total income	N/A	N/A	N/A	24,014	4,892	2,582	3,718	5,839	6,915	10,958	58,918
	<u>Percent</u>										
Distribution:											
Farms	1.0	3.6	7.6	12.2	16.3	11.4	11.7	13.8	13.6	21.0	100.0
Cash receipts	30.4	18.9	19.1	68.4	19.0	6.1	3.2	1.9	.9	.5	100.0
Net farm income ^{1/}	66.3	20.3	15.1	101.7	7.7	-1.2	-1.5	-1.7	-2.4	-2.6	100.0
Off-farm income	N/A	N/A	N/A	10.4	8.6	7.2	10.2	15.7	18.8	29.1	100.0
Total income	N/A	N/A	N/A	40.8	8.3	4.4	6.3	9.9	11.7	18.6	100.0
	<u>Dollars</u>										
Per farm:											
Net farm income ^{1/}	518,635	45,666	15,867	66,790	3,813	-880	-1,022	-988	-1,389	-982	8,042
Off-farm income	N/A	N/A	N/A	13,772	8,543	10,165	14,021	18,418	22,220	22,425	16,145
Total income	N/A	N/A	N/A	80,562	12,356	9,285	12,999	17,430	20,831	21,443	24,187
	<u>Percent</u>										
Addenda:											
Off-farm income as a percentage of total income	N/A	N/A	N/A	17	69	109	108	106	107	105	67

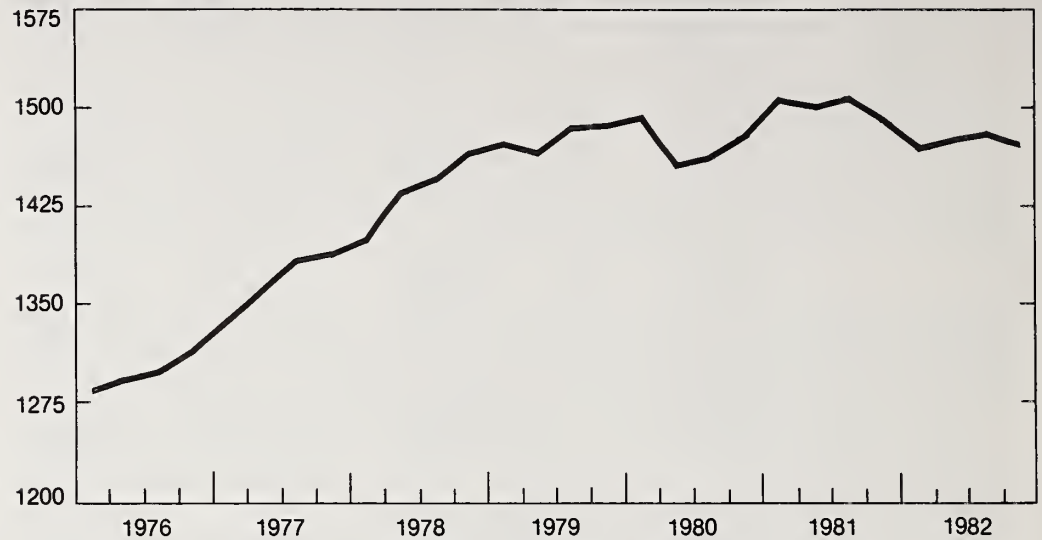
N/A = not available.

^{1/} Includes farm households. Excludes net farm inventory change.

Figure 4

Real Gross National Product

Billion 1972 dollars



quarter of 1982 was 0.8 percent below the level reached in the fourth quarter of 1979.

The decision to reduce the growth rate of the money supply to restrain inflation aggravated the sluggish economy. Money growth (M1) slowed from an increase of 8.3 percent in 1978 to 6.3 percent in 1981, causing interest rates to rise sharply. Initially, the rise in interest rates led to declines in credit-sensitive sectors such as autos and housing. As layoffs spread to the rest of the economy, nationwide unemployment rose and consumer incomes stagnated, eventually weakening demand for farm products.

Real disposable income was not quite as weak as GNP because of various stabilization programs, such as unemployment insurance and food stamps, which tend to shore up incomes during slack periods (fig. 5). Nevertheless, final demand for farm products has been weak in recent years. Real disposable personal income per capita in the fourth quarter of 1982 was just 0.8 percent above the fourth quarter of 1979.

Lagging demand pushed the unemployment rate up sharply to a post-World War II record in mid-1982 (fig. 6).

U.S. and world economic stagnation translates into continued sluggish demand for farm commodities into 1983 (fig. 7). Domestic food consumption per capita in 1982 dropped 0.5 percent (7 pounds) from 1981 and 1 percent (14 pounds) from 1980.

Figure 5

Real Disposable Personal Income per Capita

1972 dollars

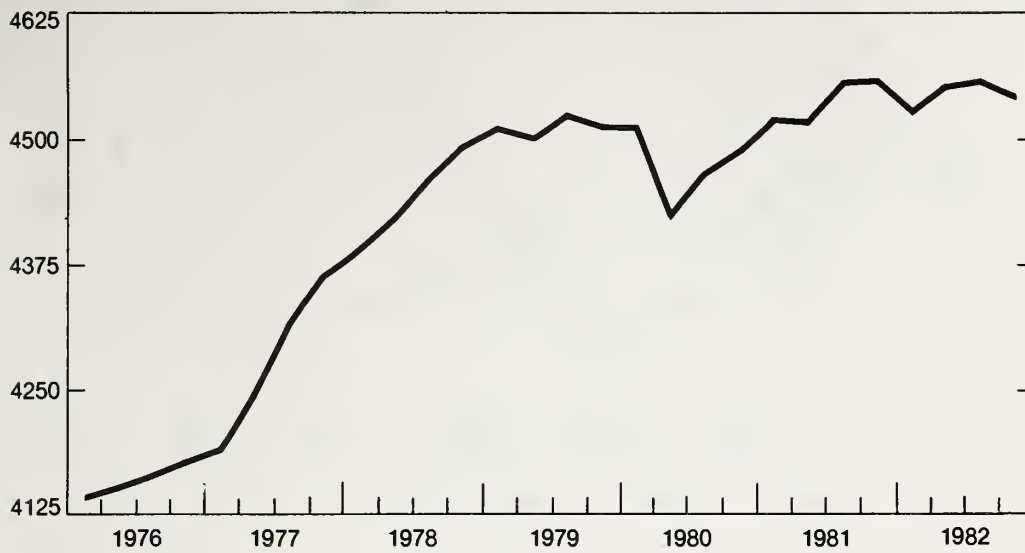


Figure 6

Unemployment Rate

Percent

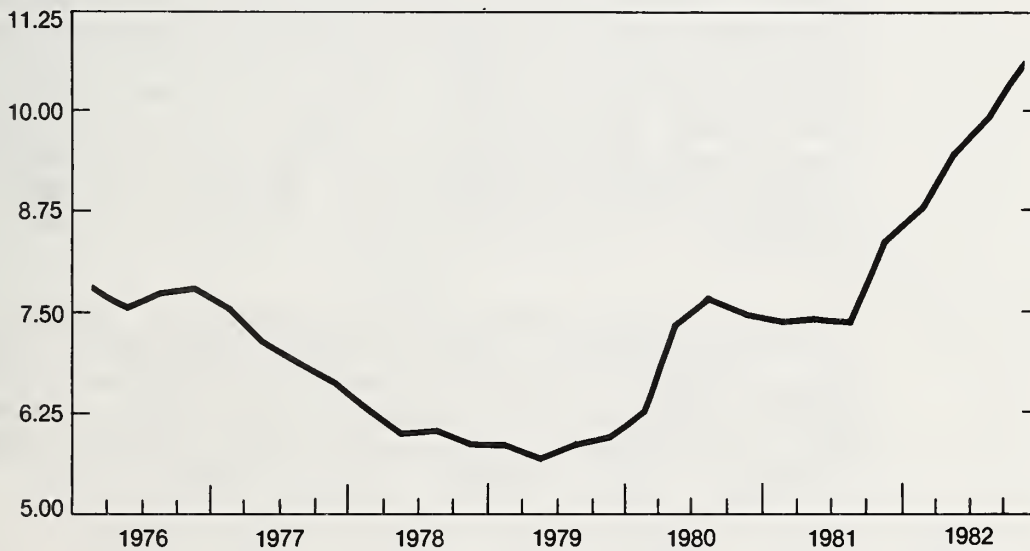
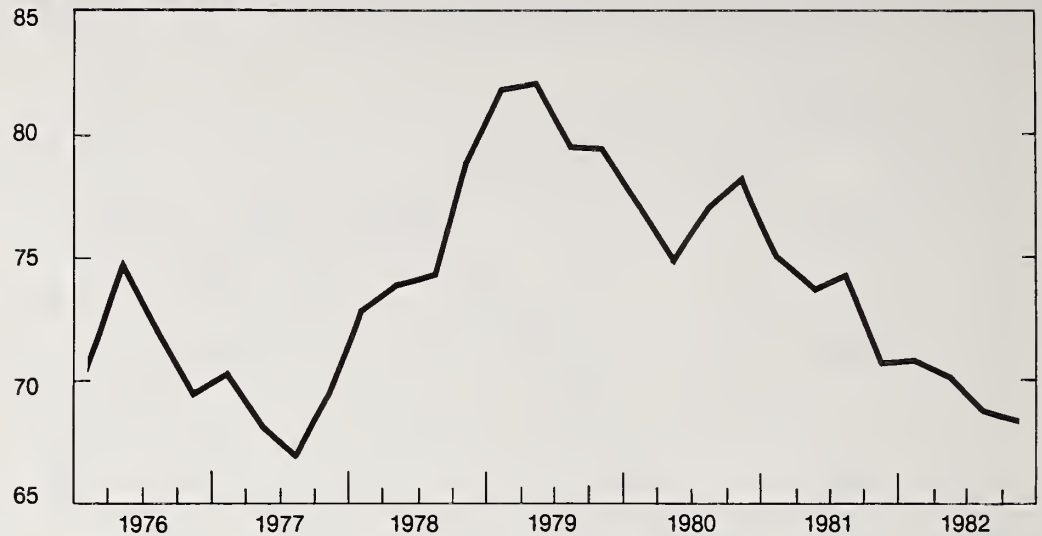


Figure 7

Deflated Cash Receipts

1972 Billion dollars



Agricultural exports fell 15 percent in value in 1982, the first decline since 1969.

Steep interest rates and inflation added to the high costs of farming. Farm Credit Administration (FCA) interest rates rose along with rates in the general economy, indicating the interlocking of rural credit conditions with national money markets (fig. 8). In 1981, both long- and short-term interest rates rose to post-World War II highs. As interest rates rose, interest expenses continued to increase as a share of farm production expenses. However, the decline in interest rates that began in mid-1982 will dampen the 1983 increase in interest expenses.

After accelerating through the late seventies, inflation slowed in 1981 and 1982 and so did the rate of increase in farm input prices. Figure 9 shows the slowdown in the general inflation rate, as indicated by the consumer price index, compared with the rate of increase in the index of prices paid by farmers for production items, interest, taxes, and wage rates.

FARM INCOME CONCEPTS

USDA has published a comprehensive set of income estimates relating to agriculture for more than 50 years. Today's concept of net farm income originated in the forties when more than 5 million farms, mostly small, family operations, depended on farming as their primary source of income. Early data collection efforts provided information about the farm sector as

Figure 8

Prime Interest Rate and the Production Credit Association

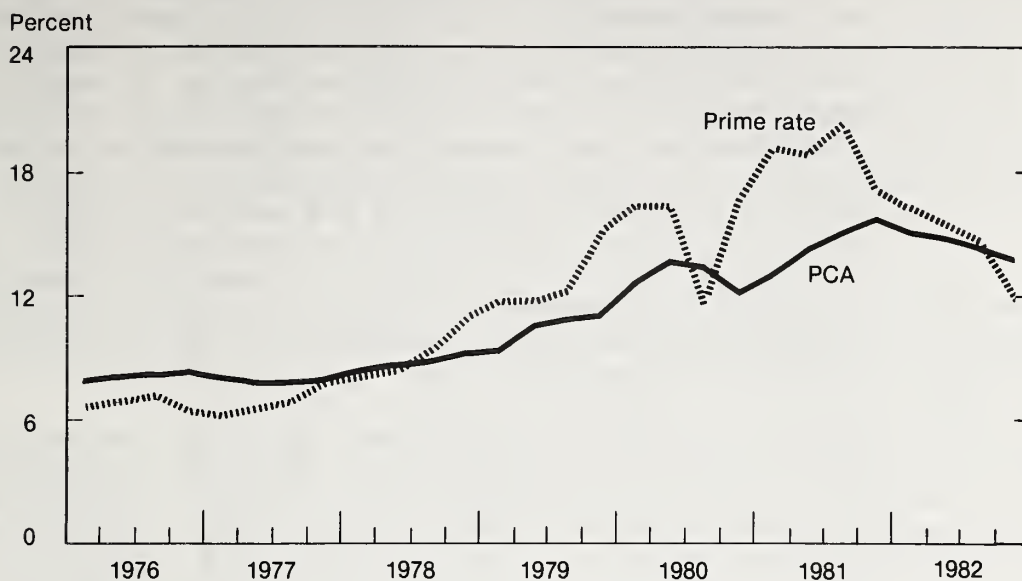
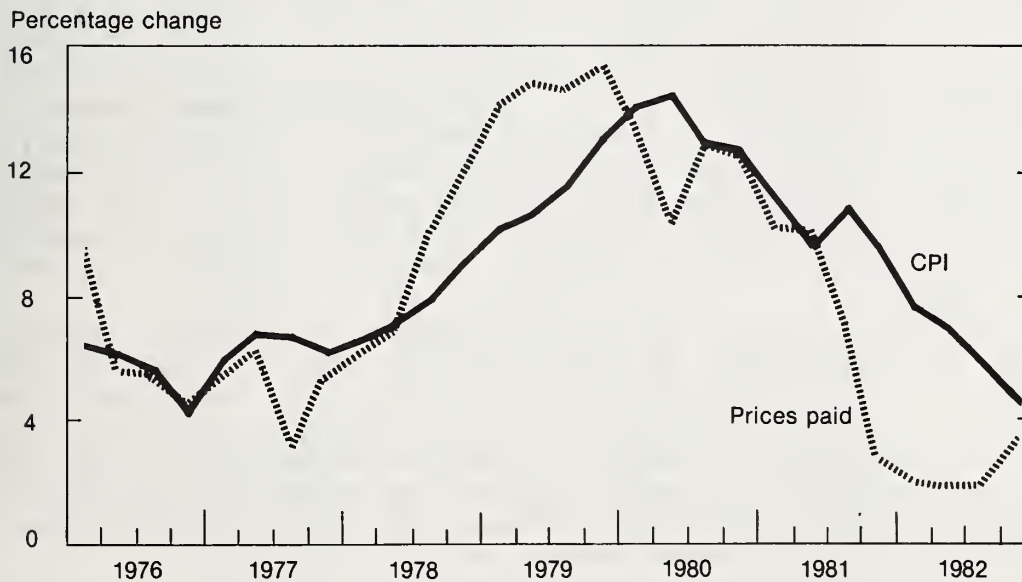


Figure 9

General Inflation and Prices Paid by Farmers



an aggregate unit. With relative homogeneity within the sector, aggregate farm income measures could be related to the well-being of farmers.

Today, the fundamental character and structure of agriculture is no longer homogenous. As a result, the economic accounts and information systems built in the absence of structural considerations are increasingly ineffective in revealing the true financial well-being of the diverse farms and economic conditions that make up today's changing farming sector. A range of comprehensive economic indicators is necessary to assess the economic vitality of the production units of the farm sector as against the well-being of the farm operator family. This permits a clearer distinction between the economic status of the farm production establishment and that of operator households, an especially useful separation for analysis at different income levels.

Other indicators of financial well-being of farm operators and the farm production sector include net cash farm income, net cash flow, off-farm income, total income of operator families, and balance sheet statistics (see table 1). Although net farm income increased from \$20.1 billion in 1980 to \$25.1 billion in 1981, net cash farm income (excluding net CCC loans) dropped to \$29.5 billion from \$35.3 billion in 1980. Net cash flow also dropped from \$38.5 billion to \$38 billion.

Net cash farm income includes only cash transactions. Net inventory change, the imputed rental value of the farm operator dwelling, and home consumption of agricultural products grown on the farm where consumed are not cash items and are removed from gross income to develop an estimate of cash income. Cash expenses include only those expenses that are cash payments. Capital consumption allowances (depreciation) and perquisites (housing and food in kind) supplied to hired labor are excluded from cash expenses. Cash income from farming measures the money available to the operator for capital asset purchases, loan retirement, and household income. Capital asset purchases such as machinery are delayed in declining cash income situations. If the declining cash flow situation persists, household cash is then reduced. If severe enough, loan payments are delayed.

Cash income from farming peaked in 1979 as the index of total output hit 111 (1977=100), the index of prices received reached 132 (1977=100), and the index of prices paid rose to only 125 (1977=100). The combination of large production plus high prices and relatively low expenses produced a high cash income position. Capital expenditures peaked in 1979 with this large cash income from farming, backed by the second highest level of cash income in 1978.

The output index dropped to 103 in 1980. Although prices received rose slightly to 134, the index of prices paid for production inputs jumped 11 percent to 139 from 125, and cash farm income fell 7 percent. Capital expenditures fell 9 percent. In 1981, the index of farm output rose to 116 and the

index of farm prices received increased to 139. The index of prices paid jumped to 148, however, and net farm cash income again dropped and capital expenditures fell 3 percent.

Cash farm income and cash flow provide a different perspective on the financial condition of farmers from the net farm income and wealth position. The cash flow may be inadequate to meet current obligations, although the wealth situation of the average operator is adequate. Many beginning farmers may face a cash flow bind as well as those farmers who have recently purchased land financed at interest rates which, in periods of unfavorable price relationships, could cause severe financial stress.

Some of the problems which have arisen since 1980 are the result of the financial conditions that developed in the seventies. Because real returns (inflation adjusted) from current income plus capital gains exceeded the real interest rate, a financial strategy of continued expansion of land purchases paid off, although cash flow might be negative for these transactions (table 4). If borrowers had negative cash flows and needed additional funds, lenders were generally willing to refinance them because land values had increased and overall rates of returns were favorable.

Financial conditions changed in 1980 and 1981. The net real return on indebted assets became negative as real capital gains were negative. Lenders were less willing to refinance debts for farmers with negative cash flows when their asset values were no longer increasing.

Total operator income includes the total income of farm operator families, including income from farm and off-farm sources. Total off-farm income includes wages and salaries, nonfarm business income, interest and dividends on investments, rents, and transfer payments. Off-farm income is influenced by the general economy more directly than farm income, but can be used for household expenses as well as farm production expenses. Off-farm income is more highly concentrated in those farms with sales of less than \$10,000, but it also supports the farming operation on farms with sales of \$100,000 and more. Total operator income was \$66.1 billion in 1979, dropped to \$56.7 billion in 1980, and rose to \$64.4 billion in 1981. Off-farm income rose each year, but farm income dropped in 1980.

Farm operators with sales of less than \$100,000 in 1981 earned more money from off-farm sources than farm sources. Although the average farm income of farmers with sales below \$40,000 was negative in 1981, their total income--including off-farm income--was near the average for all farms. Off-farm income per farm with sales of less than \$2,500 reached \$22,425, more than 30 times greater the value of agricultural products sold by these farms.

Data are also available on the debt and asset situation of farms by sales class. These data reveal that farms with 1981 sales of

Table 4--Real rates of return to U.S. farm asset ownership, 1970-81

Year	Rate of return from current income	Rate of return from real capital gains	(1 + 2) Total real rate of return to debt-free assets	Real interest rate	(3-4) Net real rate of return on indebted assets
	(1)	(2)	(3)	(4)	(5)
			Percent		
1970	4.0	-1.1	3.0	1.3	1.7
1971	4.0	4.2	8.2	3.2	5.0
1972	5.5	8.5	14.0	3.0	11.0
1973	9.6	11.3	20.9	-1.8	22.7
1974	6.0	-4.5	1.5	-3.3	4.8
1975	5.4	7.5	12.9	1.0	11.9
1976	3.5	10.6	14.1	2.7	11.4
1977	3.0	4.0	7.1	1.4	5.6
1978	4.1	8.6	12.7	-.7	13.4
1979	4.4	.9	5.3	-3.8	9.1
1980	2.7	-2.4	.3	-1.3	1.6
1981	3.3	-8.5	-5.2	2.9	-8.1

Source: Harrington, David H., Lyle P. Schertz, Kenneth H. Baum, and Ron Jeremias, "Managing Farm Finances in the 1980's," Agricultural Outlook, October 1982.

more than \$100,000 accounted for about 44 percent of total farm assets, but held more than half of all farm debt (table 5). Farms in this sales class carried an average debt-to-asset ratio of nearly 21 percent in 1981. By contrast, the average debt-to-asset ratio of farms with sales of less than \$10,000 ranged from 11.7 to 13.8 percent.

Farmers with sales over \$100,000 earned 83 percent of their total income from farm sources. These farms, on the average, also carried larger debt loads, making them highly susceptible to changes in production and marketing conditions. While changes in the outlook for farm income will affect all farm families, the more general changes in employment, wages, and prices may have a greater impact on smaller farms, given their heavy dependence on off-farm income.

FARM INCOME DEVELOP- MENTS IN 1983

The payment-in-kind (PIK) program will improve the outlook for net farm income in 1983 and 1984, largely through savings in production expenses. Although key factors--weather, the strength of economic recovery here and abroad, and the

Table 5--Balance sheet of the farming sector, (including farm households), by value of sales class, Jan. 1, 1982

Item	\$100,000 and over	\$40,000 to \$99,999	\$20,000 to \$39,999	\$10,000 to \$19,999	\$5,000 to \$9,999	\$2,500 to \$4,999	Less than \$2,500	All farms
<u>Million dollars</u>								
Total farms:								
Assets	479,327	261,364	110,223	72,691	60,126	46,459	61,580	1,091,770
Debts	99,991	44,589	17,719	10,954	8,293	6,088	7,216	194,850
Equity	379,336	216,775	92,504	61,737	51,833	40,371	54,364	896,920
<u>Percent</u>								
Distribution								
Assets	43.9	23.9	10.1	6.7	5.5	4.3	5.6	100.0
Debts	51.3	22.9	9.1	5.6	4.3	3.1	3.7	100.0
	42.3	24.1	10.3	6.9	5.8	4.5	6.1	100.0
Debt-to-asset ratio	20.9	17.1	16.1	15.1	13.8	13.1	11.7	17.8
<u>Dollars</u>								
Per farm:								
Assets	1,613,896	661,681	396,487	254,166	179,482	139,938	119,805	447,992
Debt	336,669	112,884	63,738	38,302	24,756	18,339	14,038	79,954
Equity	1,277,227	548,797	332,749	215,864	154,726	121,599	105,767	368,038

percentage of farmers who will choose to market their PIK grain in calendar year 1983--remain uncertain, net farm income after inventory adjustment is expected to range \$18 to \$22 billion this year compared to the preliminary estimate of \$20.4 billion for 1982.

Production expenses, which have not declined since 1953, are forecast to drop 2 to 4 percent from the \$144 billion estimated for 1982. Prices paid by farmers for all items, mirroring the slowdown in the general inflation rate, are forecast to rise just 2 to 4 percent. Outweighing the rise in input prices could be a 5-to 7-percent decline in overall farm input use, the sharpest drop in input use since 1934, reflecting the substantial decrease in planted acreage. If all producers remain in compliance with the PIK program, 38 percent of the 211 million acre base for PIK crops would be withdrawn from production, leaving planted acres at the level of the early seventies.

FARM INCOME DEVELOP- MENTS IN 1982

While conditions varied widely among producers, geographic regions, and commodity type, many farmers had some cash flow problems in 1982. The ratio of prices received to prices paid, which generally parallels shortrun changes in realized net income and net cash income, declined nearly 9 percent in 1982. The rate did not reflect the direction of cash income in 1982 because of the tremendous increase in the volume of farm marketings and input reductions. Prices received by farmers averaged about 4 percent lower than in 1981 when crop prices averaged 10 percent less and livestock prices averaged about 1 percent higher. Except in September and December, the monthly index of prices received for all commodities consistently averaged below 1981. This reflected both the large crop stocks and weak demand for agricultural products.

While commodity prices sagged, prices paid by farmers for commodities and services increased about 2 percent mirroring the slowdown in the general inflation rate. This was the smallest rise in prices paid since 1968, but 1982 was the third consecutive year that the increase in prices paid exceeded prices received. Declining prices for feed (due to large feed grain stocks in the face of weak demand) and fuels were offset by increasing prices for machinery, chemicals, farm wage rates, and motor supplies. Prices paid for fertilizer and feeder livestock remained near 1981 levels.

Because declining crop receipts were about offset by rising livestock receipts, total cash receipts from farm marketings remained about even with 1981, at \$144 billion. Total farm output about equaled 1981's record when crop output exceeded the 1981 high and offset a slight livestock drop. Crop cash receipts fell slightly to \$74.8 billion, when a 10-percent decline in prices received for crops offset record marketings and heavier use of CCC loans by eligible farmers. Receipts fell about 5 percent for food grains, 4 percent for cotton, 5 percent for oil crops, and 7 percent for vegetables. Receipts for feed grains rose 5 percent as large marketings and heavy CCC loan use

offset reduced prices. Receipts for fruits and nuts rose substantially because of strong prices throughout much of the year and larger marketings near the close of the year.

The slight decline in crop receipts was counteracted by a small gain in livestock receipts. Receipts from marketings of livestock and products rose 1 percent to about \$69.2 billion when a small rise in prices offset a slight decline in marketings. Cash receipts from hog sales rose about 12 percent when sharply higher prices offset a decline in hog slaughter. However, receipts for poultry and eggs fell about 5 percent, for the first time since 1974, when weak demand forced prices down. Cash receipts from marketings of cattle and dairy products remained near the levels of the previous year. Falling wholesale milk prices offset larger milk marketings triggered by increased output per cow and a larger dairy herd.

Production expenses increased about 2 percent to \$144.4 billion, the smallest rise since 1964. The increase in prices paid by farmers was the smallest since 1968. Price declines for feed and fuels, together with little change in the prices of feeder livestock and fertilizer, were responsible. Farmers likely reduced the use of nearly every input except feeder livestock, repairs on capital items, and credit. Input reductions were caused by high interest rates, 3 consecutive years of reduced cash income, and a decline in planted acreage.

Despite a large increase in direct Government payments, especially deficiency and reserve storage payments, net cash income estimates in 1982 totaled \$24.2 billion (table 1). Total cash income (cash receipts from marketings excluding CCC loans, Government payments, and other cash income) declined when increased Government payments were more than offset by declining crop receipts. Cash expenses (excluding depreciation and noncash perquisites to hired labor) rose about 1 percent to \$117 billion. Most of the increase in cash expenses came from increased interest charges on the growing farm debt. Interest expenses rose about 13 percent to nearly \$23 billion, total farm debt rose 7 percent, and the average interest rate on outstanding debt increased to nearly 11 percent.

Net farm income before adjusting for inventory change was estimated at about \$20.2 billion, up from \$19.6 billion in 1981. Average disposable income per capita, which measures the per person after-tax income from both farm and off-farm sources, fell nearly 4 percent to about \$7,420 in nominal dollars--about 82 percent of per capita earnings of the nonfarm population in 1982. That compares with a ratio of 104 in 1973, the record high, and 88 in 1981.

FARM INCOME DEVELOPMENTS IN 1981

Aggregate 1981 farm income statistics illustrate the cost-price squeeze farmers have experienced since 1980. Cash receipts from farm marketings rose only 3 percent in 1980, and cash production expenses rose nearly 9 percent. As a result, net cash farm income in 1981 declined to \$29.5 billion, 16 percent below 1980

and 22 percent under the 1979 peak. Although net cash income to the farm sector fell, net farm income after adjusting for inventory change rose from \$20.1 billion in 1980 to \$25.1 billion (table 6). This 25-percent increase in 1981 net farm income resulted from the large buildup in crop inventories held by farmers at the close of the year. The \$5.5-billion value of the change in farm inventories in 1981, of which \$5.2 billion was crop inventories, was attributable to the record 16-percent increase in crop output (table 7).

Livestock marketings declined somewhat from the first to the second half of 1981, and crop marketings increased substantially. The first half of 1981 was dominated by the effects of the drought-reduced 1980 crop. Reduced supplies supported higher prices for most crops. These higher prices prompted many farmers, especially corn, cotton, and rice growers, to redeem CCC loans during the second quarter.

In mid-July, commodity markets began reacting to the favorable growing weather across much of the country. Most crop prices fell as the potential for large production became apparent. Record-large crop output led to increased crop marketings and reduced farm prices in the second half of 1981 and into 1982. On balance, the increase in volume outweighed the decline in prices, leaving second-half crop receipts somewhat higher than a year earlier. Poor market prices in the last part of 1981 prompted many farmers to place their grains in the farmer-owned reserve which was opened early. Large quantities of grain and cotton were also placed under regular CCC loans, since the loan rate was above market prices in many areas of the country. The strong CCC activity contributed substantially to fourth quarter crop cash receipts because net CCC loans are treated as receipts.

Low farm prices also triggered deficiency payments for much of the 1981/82 crop. Wheat and barley payments were made in December 1981, and payments for cotton, rice, and sorghum were disbursed in 1982. These disbursements, together with the 1980 crop disaster payments made early in 1981, contributed to cash flow in the farm sector.

Prices Paid and Received

Prices farmers received for all farm commodities rose about 3 percent in 1981 after rising only 2 percent in 1980 (fig. 10). All the increases came during the first two quarters; farm prices fell substantially in the second half. Prices received by crop farmers rose more than 7 percent, the same as in 1980. Prices rose most for vegetables (up 20 percent) and tobacco (up 12 percent), declined for cotton (down 3 percent), and remained the same for wheat. Prices received by livestock producers fell nearly 1 percent after declining 2 percent in 1980. Prices fell for cattle (down 6 percent) and turkeys (down 4 percent) and rose for hogs (up 12 percent) and eggs (up 10 percent).

Prices paid by farmers for production items, interest, taxes, and wages rose 8 percent in 1981, the smallest increase in this index since 1977. Even so, their rise more than offset the gain

Table 6--Major net farm income components (including net Commodity Credit Corporation loans and farm households), selected years

Item	1970	1978	1979	1980	1981
Million dollars					
Farm marketings	50,539	112,486	131,711	139,535	143,466
Crops	20,977	53,676	63,128	71,739	74,984
Livestock	29,532	58,810	68,584	67,796	68,483
Net inventory change	6	1,071	5,613	-4,292	5,528
Government payments	3,717	3,030	1,375	1,286	1,932
Other farm income	558	1,234	1,547	1,550	1,934
Gross rental value of farm dwellings	3,097	8,243	9,753	11,373	12,728
Home consumption	776	1,186	1,321	1,157	1,164
Gross farm income	58,663	127,244	151,320	150,610	166,753
Nonfactor payments	35,000	78,263	92,471	99,628	105,410
Intermediate product expenses	25,638	57,306	68,874	73,441	77,088
Farm origin	13,280	27,254	33,414	32,508	31,777
Feed	8,028	14,466	17,766	18,618	18,905
Livestock	4,324	10,150	12,688	10,539	8,916
Seed	928	2,638	2,960	3,351	3,956
Manufactured inputs	5,410	15,274	18,493	23,117	25,143
Fertilizer and lime	2,435	6,619	7,530	9,922	10,074
Pesticides	960	2,656	3,057	3,317	3,727
Fuel and oil	1,711	4,609	6,264	8,099	9,298
Electricity	304	1,389	1,641	1,780	2,045
Other	6,948	14,778	16,968	17,816	20,169
Repair and operation	2,828	6,617	7,281	7,997	7,659
Machine hire, customwork, and contract labor	1,304	2,604	3,202	3,302	4,070
Marketing charges	822	1,460	1,757	1,741	2,065
Other	1,994	4,097	4,728	4,776	5,594
Capital consumption allowances	6,766	17,354	19,686	22,003	23,779
Business taxes	2,596	3,603	3,910	4,185	4,543
Interest	3,381	9,975	12,679	15,764	19,716
Real estate	1,618	4,902	6,576	8,455	10,838
Nonreal estate	1,763	5,073	6,102	7,309	8,878
Wages to hired labor	3,950	7,520	8,484	9,356	9,984
Net rent to nonoperator landlords	2,096	4,831	5,340	5,737	6,526
Total production expenses	44,427	100,589	118,974	130,485	141,636
Net farm income of operators	14,235	26,655	32,347	20,125	25,117
Charges against gross farm income	58,663	127,244	151,320	150,610	166,753
Addenda:					
Total operator income	31,852	55,376	66,129	56,694	64,446
Net farm income of operators	14,235	26,655	32,347	20,125	25,117
Off-farm income	17,617	28,721	33,782	36,569	39,329

Table 7--Farm sector output, input, and productivity, selected years

Item	Unit or base period	1970	1975	1976	1977	1978	1979	1980	1981	1982
Output index:										
Crops	1977=100	77	93	92	100	102	113	101	116	1/120
Livestock	1977=100	99	95	99	100	101	104	108	108	1/107
Total	1977=100	84	95	97	100	104	111	103	115	1/117
Input index	1977=100	97	97	98	100	101	104	103	103	1/103
Productivity index 2/	1977=100	87	99	97	100	102	106	100	112	1/114
Principal crops:										
Planted	1,000 acres	293,211	332,236	336,091	344,873	336,438	346,430	356,173	364,771	362,720
Harvested	1,000 acres	283,096	324,040	325,324	333,282	326,423	337,371	340,535	355,731	353,780
Machinery on farms:										
Tractors 3/	Thousands	4,619	4,469	4,434	4,402	5,050	4,989	4,880	4,740	4,655
Motor trucks	Thousands	2,984	3,032	3,043	3,044	3,450	3,555	3,734	3,972	4,050
Grain combines 4/	Thousands	790	524	527	535	660	664	669	671	674
Corn pickers and shellers 5/	Thousands	635	615	610	605	695	694	690	687	685
Balers 6/	Thousands	708	667	641	615	770	769	766	761	758
Tractor horsepower:										
Total	Mil. horsepower	203	222	228	232	264	266	269	275	275
Per tractor	Horsepower	44	50	51	53	52	53	55	58	59
Fertilizer and liming materials used: 7/										
Nitrogen	1,000 tons	7,459	8,608	10,412	10,647	9,965	10,715	11,407	11,784	N/A
Phosphate	1,000 tons	4,574	4,511	5,228	5,630	5,096	5,606	5,432	5,424	N/A
Potash	1,000 tons	4,035	4,453	5,210	5,834	5,526	6,244	6,245	6,243	N/A
Total	1,000 tons	16,068	17,572	20,850	22,111	20,587	22,565	23,084	23,451	N/A
Liming materials 8/	1,000 tons	25,901	31,128	38,147	31,381	30,697	30,979	34,402	N/A	N/A
Fuels and energy used for farming:										
Gasoline	Billion gals.	4.0	4.4	3.9	3.8	3.6	3.3	3.1	3.0	2.9
Diesel	Billion gals.	1.9	2.4	2.8	2.9	3.2	3.0	3.2	3.1	3.0
Fuel oil	Billion gals.	N/A	N/A	N/A	N/A	.286	.191	.162	.165	N/A
LP gas	Billion gals.	N/A	1.0	1.2	1.1	1.26	1.12	1.05	1.05	1.00
Natural gas	Billion cu. ft.	N/A	N/A	N/A	N/A	153.2	127.3	93.3	94.1	N/A
Electricity	Billion kwh	N/A	N/A	N/A	N/A	36.2	31.4	39.2	39.9	39.7
Total hours used for farmwork:										
Crops	Million hours	2,788	2,626	2,552	2,526	2,445	2,432	2,440	2,445	N/A
Livestock	Million hours	2,344	1,701	1,608	1,514	1,410	1,332	1,264	1,186	N/A
Total 9/	Million hours	5,896	4,971	4,779	4,640	4,428	4,324	4,253	4,169	N/A

N/A = not available.

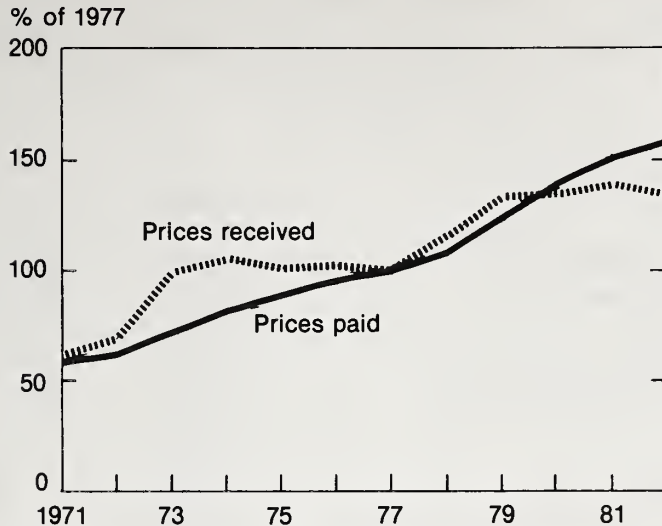
1/ Preliminary. 2/ Data computed from unrounded index numbers. 3/ Includes wheel- and crawler-type tractors. 4/ Data for 1975 and after are for self-propelled combines only. 5/ Includes cornheads for combines. 6/ Does not include balers producing bales weighing more than 200 pounds.

7/ Nitrogen, phosphate, and potash. Includes 50 States and Puerto Rico. Includes fertilizer for nonfarm use. 8/ Includes 48 States only.

9/ Hours include labor used on crops, livestock, and overhead.

Figure 10

Prices Received and Paid by Farmers



Prices paid includes commodities and services, interest, taxes, and wage rates.

in farm commodity prices. Prices paid for farm-origin inputs rose only 1 percent, reflecting reduced prices for feeder livestock and smaller increases in feed prices than in 1980. Prices for input items originating off the farm increased 10 percent with interest, machinery, and fuel rising most. The ratio of the index of prices received by farmers to the index of prices paid fell 4 percent, reflecting the cost-price squeeze facing many U.S. farmers.

Cash Receipts

Cash receipts rose about 3 percent from 1980 with crop receipts up nearly 5 percent to \$75 billion and livestock receipts up 1 percent to \$68.5 billion (table 8). In the livestock sector, reduced cash receipts from cattle and calves were offset by higher receipts from hogs, poultry, and dairy. Cash receipts for cattle declined 8 percent, while hog receipts surged almost 10 percent and broiler receipts were up a little over 7 percent. Dairy receipts rose 9 percent.

In the crop sector, decreasing cash receipts from feed crops, oil crops, and fruits and nuts were offset by increased receipts from food grains, vegetables, and tobacco. Food grain receipts rose more than 19 percent as wheat receipts increased 18 percent and rice receipts rose 25 percent. Cash receipts for vegetables were up sharply (20 percent) in response to higher potato receipts and strong sales of other vegetables, such as dry beans, tomatoes, and onions. Tobacco receipts posted a 22-percent gain with both production and farm prices up substantially.

Table 8--Cash receipts from marketings of livestock and crops
(including net Commodity Credit Corporation loans), 1978-81

Commodity	1978	1979	1980	1981
	Million dollars			
All commodities	112,486	131,711	139,535	143,466
Livestock and products	58,810	68,583	67,796	68,482
Cattle and calves	28,111	34,400	31,464	28,936
Dairy products	12,509	14,659	16,605	18,106
Hogs	8,754	9,027	8,921	9,799
Broilers and farm chickens	3,845	4,189	4,432	4,760
Eggs	2,939	3,318	3,247	3,640
Turkeys	1,156	1,215	1,270	1,247
Sheep and lambs	453	474	469	411
Other livestock products <u>1/</u>	1,043	1,301	1,388	1,584
Crops	53,676	63,128	71,739	74,984
Feed crops	11,427	14,042	18,295	18,267
Oil-bearing	13,023	14,326	15,456	14,106
Food grains	5,839	9,047	10,386	12,399
Vegetables	5,941	6,451	7,023	8,407
Fruit and tree nuts	5,764	6,467	6,575	6,542
Cotton and cottonseed	3,465	4,305	4,469	4,552
Tobacco	2,604	2,271	2,672	3,253
Other crops <u>2/</u>	5,614	6,219	6,865	7,459

1/ Ducks, geese, pigeons, wool, horses, mules, mohair, honey, beeswax, bees, and fur animals. 2/ Sugar crops, greenhouse and nursery products, forest products, legumes and grass seeds, hops, mint, broomcorn, popcorn, hemp fiber and seed, and flax fiber.

Crop cash receipts Total cash receipts from 1981 farm marketings of \$143.5 billion increased \$4 billion from 1980 receipts. Although total nominal receipts hit a record high, they failed to keep up with the rate of inflation in the general economy. In constant (1972) dollars, total receipts actually dropped about 6 percent after falling about 3 percent in 1980.^{1/} The volume of farm marketings for all commodities rose about 2 percent when crops increased 2 percent and livestock volume equaled 1980.

Cash receipts from feed crops, oil crops, and fruits and nuts declined. Feed crop receipts were down less than 1 percent in 1981 with corn receipts off 3 percent. Oil crop receipts declined 9 percent in 1981, led by a 13-percent drop for

^{1/} Deflated by the GNP implicit price deflator.

soybeans. Cotton receipts declined 2 percent. Cash receipts from fruits and tree nuts dipped by less than 2 percent.

Food crops. Food grain receipts surged to a record \$12.4 billion when wheat receipts rose 18 percent to \$10.5 billion, and rice receipts increased 25 percent to \$1.9 billion. Receipts for rye rose 28 percent to \$38 million. Production of food grains rose to a record high in 1981 when record amounts of both wheat (up 18 percent) and rice (up 27 percent) were harvested. A record 81 million acres of wheat were harvested with 58.6 million acres being winter wheat. Favorable weather and soil moisture conditions raised the national average yield to a record 34.5 bushels per acre. Yields for winter wheat declined because of freeze damage to the hard red winter wheat crop in some areas, but yields achieved record highs for durum and hard red spring wheat crops. North Dakota, the leading wheat producer in 1981, harvested 331.7 million bushels because of a large spring wheat harvest, while the usual leader, Kansas, suffered a freeze-damaged wheat crop. Total wheat production amounted to nearly 2.8 billion bushels, the second consecutive record crop.

The calendar year average price for all wheat was \$3.88 per bushel, the same as in 1980. Prices fell through the first 7 months before beginning to rise slowly through the end of the year. The price peaked in January at \$4.21, while the July and August price of \$3.62 was the lowest. Of the \$10.5 billion in cash receipts for wheat, over \$1 billion was accounted for by net CCC loans made. Heavy entries in the third quarter spurred by low wheat prices accounted for about 70 percent of net loans made. Direct Government payments of about \$624 million also contributed to the overall welfare of wheat producers in 1981. Disaster payments made in 1981 for the drought-damaged 1980 crop amounted to \$231 million, and deficiency payments for the record-large 1981 crop accounted for \$393 million.

A record harvested rice acreage of 3.8 million acres and a record-high average yield of 4,819 pounds per acre increased production 25 percent to 182.7 million hundredweight (cwt). Much of the additional acreage occurred in Arkansas (the largest rice producer at 69.6 million cwt) and Mississippi (also with the largest yield increase at 14 percent), while the largest average yields were recorded in California (6,900 cwt per acre) and Texas (4,700 cwt per acre).

The calendar year price for rice rose 8 percent to \$11.94 per cwt. This, combined with increased marketings from the record crop, raised rice cash receipts 25 percent to \$1.9 billion. Second-half net CCC loans added \$134 million to receipts, but strong first-half prices spurred large redemptions of CCC loans leaving net CCC loans for rice at a minus \$7 million for the year.

Feed grains. Corn production rose 23 percent to a record 8.2 billion bushels when 74.7 million acres were harvested with an

average yield of 109.8 bushels per acre, also a new high. Record yields were realized in all Corn Belt States except Ohio and Indiana. Iowa was again the leading producer with more than 1.7 billion bushels.

The calendar year corn price rose 8 percent to \$2.92 per bushel, but strong first-half prices slowly gave way to declining second-half prices. Corn prices reached \$3.25 in March but fell to \$2.34 in November when the large crop hit the market.

Cash receipts from marketings of corn fell 3 percent in 1981 to \$13.6 billion. Net CCC loans, which added nearly \$1.6 billion to fourth-quarter corn receipts, added only about \$150 million to total 1981 corn receipts. Prices rose above trigger levels in January and resulted in a total of about \$1.9 billion worth of redemptions from the grain reserve in the second and third quarters.

The sorghum crop totaled 492.4 million cwt, up 52 percent from the drought-reduced 1980 crop. About 13.7 million acres were harvested for sorghum grain, while the average yield of 64.1 bushels per acre was 1.4 bushels above the previous record yield set in 1979. Texas was the leading producer of sorghum grain at 153.1 million cwt.

Sorghum grain prices averaged \$4.72 per cwt, up 1 percent from 1980. Increased prices, together with increased marketings, raised sorghum receipts about 9 percent to \$1.5 billion. Low sorghum prices led to strong fourth-quarter CCC loan placements which left net CCC loans for sorghum at \$208 million for 1981.

The barley crop notched a record 479 million bushels, up 33 percent from the drought-affected 1980 crop. Increased harvested acreage and a record average yield of 52.3 bushels per harvested acre were responsible for the larger production. North Dakota, with a 50-percent increase in yield from 1980, was the leading producer of barley at 105.6 million bushels.

The calendar year barley price was \$2.73 per bushel in 1981, up 10 percent from 1980. Combined with increased marketings, barley cash receipts rose 20 percent to \$884 million. Net CCC loans of \$36 million added slightly to 1981 barley receipts.

Oats production was 509.2 million bushels, up 11 percent from 1980 but still the second smallest crop since 1881. Harvested acreage rose 9 percent to 9.4 million acres, and average yields rose to 54 bushels per acre. Minnesota was the leading oats producer in 1981 with 90.1 million bushels. The average oats price rose 25 percent to \$1.92 per bushel in calendar 1982 and was the main force in raising oats receipts 23 percent to \$373 million.

Hay production increased 9 percent to 143.1 million tons when harvested acreage increased to 60.2 million acres and yields rose to 2.38 tons per acre. Wisconsin was the leading producer of all hay, at 11.1 million tons, of which 9.4 million tons were

alfalfa and alfalfa mixtures. The 1981 calendar year average price for all hay rose 1 percent to \$67.51 per ton. Cash receipts for all hay remained flat at \$1.9 billion.

Oil crops. The soybean crop totaled about 2 billion bushels, up 12 percent from 1980. Area harvested declined about 2 percent to 66.4 million acres, but average yields increased nearly 4 bushels to 30.1 bushels per acre. Illinois led soybean producers with 351.5 million bushels, followed by Iowa with 326 million.

The 1981 calendar year average price for soybeans was \$6.92, up 3 percent from 1980. However, reduced marketings from the drought-shortened 1980 crop offset increased marketings from the 1981 crop, leaving soybean receipts down 13 percent at \$12.4 billion. National average soybean prices peaked in January at \$7.80 per bushel, but fell to \$6.00 in December. Net CCC loans added \$614 million to fourth-quarter cash receipts and, after accounting for second- and third-quarter loan redemptions, added \$448 million to total 1981 soybean receipts.

The 1981 peanut crop reached nearly 4 billion pounds, up 73 percent from the drought-reduced 1980 output. Harvested acreage at 1.49 million acres yielded an average of 2,675 pounds per acre. Georgia, again the leading peanut producer at nearly 1.7 million pounds, grew about 42 percent of the U.S. total. The calendar year average peanut price was 31.1 cents per pound, up 19 percent from 1980. Together with the larger 1981 marketings, peanut cash receipts surged 111 percent to \$1.2 billion.

The 1981 sunflowerseed crop totaled nearly 4.5 billion pounds, up 20 percent from the drought-stricken 1980 crop but 38 percent less than the 1979 peak production. Area harvested rose 3 percent to 3.8 million acres, and average yields rose 16 percent to 1,177 pounds. North Dakota, the largest producer of sunflowerseed, accounted for 70 percent of all production. Oil-type varieties made up 95 percent of 1981 production, up from 94 percent in 1980 but down from 96 percent in 1979.

The calendar year average price for sunflowerseed rose 18 percent to \$10.95 per cwt. However, sharply reduced marketings in 1981, caused primarily by the small 1980 crop, more than offset the price gains and pushed sunflowerseed cash receipts down 21 percent to \$456 million.

Flaxseed production fell 2 percent in 1981 to 7.8 million bushels. Average yields rose 9 percent to 12.6 bushels per acre, but harvested acreage fell 10 percent to 617,000 acres. North Dakota regained its status as the leading producer of flaxseed in 1981, accounting for 54 percent of total production. The calendar year average price for flaxseed rose 10 percent to \$7.10 per bushel. However, cash receipts from flaxseed sales fell 20 percent to \$53 million when sharply reduced marketings more than offset higher prices.

Cotton. The 1981 cotton crop totaled just over 7.5 billion pounds, up 41 percent from the drought-shortened 1980 output. Harvested acreage was 13.8 million acres as acreage abandonment produced the lowest level since 1977. Harvested average yield was 543 pounds per acre, up sharply from 404 pounds a year earlier. Texas continued to produce the largest amount of cotton with 2.7 billion pounds, or 36 percent of the U.S. total.

The calendar year average price for upland cotton lint was 67 cents per pound, down 3 percent from 1980. Monthly prices eased downward in 1981 after peaking in January at 77 cents per pound. The low point of 51 cents in December reflected the size of available cotton stocks.

Cash receipts from marketings of cotton lint in 1981 amounted to \$4.1 billion, up 3 percent from 1980, while cottonseed cash receipts reached \$473 million. Total cotton receipts including cottonseed were up 2 percent at \$4.6 billion. Cottonseed production rose 43 percent to about 6.4 million tons, but calendar year average prices fell 16 percent to \$118.67 per ton. Net CCC loans for cotton added about \$160 million to total cotton receipts as loans made in the first and fourth quarters more than offset redemptions in the second and third quarters. Disaster payments on the 1980 crop amounted to \$222 million and helped improve cash flow for those cotton farmers affected by the 1980 drought.

Tobacco. Tobacco production rose 15 percent to about 2.1 billion pounds in 1981 when area harvested increased 6 percent to 975,980 acres, and average yields jumped 9 percent to 2,114 pounds per acre. The increase in production, along with a 6-percent increase in the calendar year price to \$1.62 per pound, raised 1981 tobacco receipts 22 percent to \$3.3 billion.

Fruits and nuts. Cash receipts from marketings of all fruits and nuts fell 1 percent in 1981 to \$6.5 billion. Production of all noncitrus fruits fell 14 percent to 11.9 million tons when both grape production (down 20 percent) and apple production (down 12 percent) dropped. Apple prices fell 17 percent in 1981 when the record-large 1980 crop led to heavy marketings and low prices through July. Cash receipts for apples fell 11 percent in 1981 when the lower average price offset increased volume. Cash receipts from marketings of grapes, the 15th largest crop in terms of cash receipts, fell about 7 percent to \$1.2 billion as reduced marketings offset higher prices.

Production of citrus fruits fell about 8 percent in 1981 to 15.2 million short tons; both total orange production (minus 11 percent) and grapefruit production (minus 7 percent) declined. Calendar year average orange prices rose 12 percent to \$3.68 per box. Marketings also increased due to the large 1980 crop, raising cash receipts 13 percent to \$1.3 billion. Cash receipts from sales of grapefruit rose 3 percent bolstered by increased prices offsetting reduced marketings.

Production of tree nuts rose substantially in 1981 as almond production (up 27 percent), pecan production (up 85 percent), and English walnut production (up 14 percent) recovered from the 1980 drought. Prices for almonds fell 52 percent to \$71 per ton, offsetting increased marketings and leaving almond receipts 39 percent below 1980. Although pecan average prices fell 30 percent in 1981, sharply higher marketings more than offset the price decline, boosting pecan receipts 34 percent. Walnut cash receipts rose 11 percent as both prices and marketings increased.

Vegetables. Cash receipts from marketings of vegetables increased 20 percent in 1981 to \$8.4 billion. Prices farmers received for all vegetables rose 20 percent in 1981. Total marketings were about even with 1980 as increased marketings from the large 1981 crops offset reduced marketings in the first half of the year from the smaller 1980 output.

Total production of potatoes rose 12 percent to 338.6 million cwt when area harvested rose 7 percent and average yields increased more than 4 percent. Idaho potatoes accounted for 25 percent of total U.S. production in 1981, followed by Washington (16 percent) and Maine (8 percent). Potato prices tallied record highs and averaged \$7.02 per cwt in calendar year 1981, 44 percent higher than the 1980 average. The high prices were the result of the small outturn in 1980. The volume of potatoes marketed declined 7 percent, but this was not enough to offset the high prices, leaving potato receipts, at \$1.8 billion, up 37 percent.

Production of dry edible beans increased 22 percent to 32.2 million cwt on the strength of increased harvested acreage. Dry bean prices averaged \$28.58 per cwt in calendar year 1981, 15 percent greater than 1980. Prices for dry beans were strong in 1981 because of export demand especially from Mexico, which took over a fourth of U.S. production. Cash receipts for dry beans rose 26 percent to \$764 million when both prices and marketings increased.

Cash receipts also increased for most other vegetable crops including onions (52 percent), sweetpotatoes (85 percent), carrots (32 percent), and celery (19 percent). Sharply higher prices were the main reason for most of these increases.

Livestock cash receipts

Cash receipts from marketings of livestock and products rose 1 percent and totaled \$68.5 billion, up from the \$67.8 billion of 1980 and nearly equal to 1979's record of \$68.6 billion. Marketing volume from the record-equaling livestock output rose slightly in 1981, while prices received by farmers for all livestock and products fell 1 percent. Prices for livestock fell because of a combination of large meat supplies and depressed demand for meats.

Red meats. Commercial beef production increased 3 percent in 1981 to 22.2 billion pounds. Cattle slaughter rose about 3 percent, and commercial average dressed weights were a record-high 636 pounds. Nonfed slaughter of cattle rose in

1981, offsetting a small decline in fed slaughter. The farm price of cattle fell 1 percent in 1981 to \$58.51 per cwt, the second consecutive year of declining cattle prices. Large total meat supplies and declines in real consumer incomes kept cattle prices low during the year. Given these movements, cash receipts from marketings of cattle fell 8 percent to \$26.8 billion. Cash receipts from calves fell 14 percent to \$2.2 billion as veal production rose about 10 percent but was offset by a 16-percent drop in farm price.

Commercial pork production totaled 15.7 billion pounds in 1981, down 4 percent from 1980 but still the second largest on record. Commercial slaughter amounted to 91.6 million head, down 5 percent from 1980, but average dressed weights were 1 percent higher. Barrow and gilt slaughter accounted for 93 percent of total slaughter. The farm price of hogs averaged \$43.41, up 12 percent from 1980 as second-half prices, reacting to lower pork production, were above those of the first half of 1981. Hog prices peaked in July at \$49.30 before falling to \$39 in December. Cash receipts from marketings of hogs and pigs rose 10 percent to \$9.8 billion in 1981 when higher prices more than offset reduced production.

Commercial slaughter of sheep and lambs amounted to about 6 million head, up 8 percent from 1980. Commercial production rose 6 percent to 327 million pounds as dressed weights declined. The farm price for lamb averaged \$55.38 per cwt, down 13 percent from 1980 and the lowest since 1977. Cash receipts from sheep and lamb marketings declined 12 percent in 1981 to \$410 million as reduced prices counteracted increased marketings.

Poultry and eggs. Broiler production in 1981 totaled nearly 12 billion pounds, up 5 percent from 1980. The number of broilers slaughtered rose 4 percent, and average marketing weights increased about 1 percent. The farm price of broilers rose marginally to \$27.98 per cwt when reduced second-half prices offset higher first-half prices. Cash receipts from marketing broilers rose 8 percent to \$4.6 billion in 1981.

Turkey production in 1981 totaled nearly 2.6 billion pounds, up 6 percent from 1980. The number of birds marketed rose about 5 percent while market weights increased 3 percent. The farm price of turkeys fell 4 percent to \$38.46 per cwt when prices slipped in the second half. Cash receipts from turkey marketings fell 2 percent to \$1.25 billion in 1981.

Egg production in 1981 remained steady at 5.8 billion dozen. The number of table-egg layers on farms fell during the second half of the year, and the rate of lay was about the same as in 1980. The farm price of eggs rose 10 percent to 62.2 cents per dozen as prices strengthened in the second-half of the year. Cash receipts for eggs rose 12 percent to \$3.6 billion in 1981 on the strength of increased prices.

Dairy products. Total milk production rose 3 percent in 1981 to 133 billion pounds when milk cow numbers increased 1 percent to

10.9 million and output per cow increased 2 percent to 12,147 pounds. Net removals by USDA amounted to 12.9 billion pounds in 1981, up almost 50 percent from the 8.8 billion pounds in 1980. The calendar year farm price of milk rose more than 6 percent in 1981 to \$13.76 per cwt. Cash receipts from wholesale farm marketings of milk grew 9 percent to \$17.7 billion because of increased production and prices. Cash receipts from marketings of retail milk and milk fat rose 11 percent to about \$367 million.

Farm Income from
Nonmarketing Sources

Farm income from sources other than farm marketings (direct Government payments, other cash income, and nonmoney income) increased 15 percent in 1981 to about \$17.7 billion. Direct Government payments totaled about \$1.9 billion, up \$600 million from 1980. First-quarter disaster payments, fourth-quarter deficiency payments, farmer-owned reserve storage payments, and the emergency livestock feed program accounted for most of the increase in total payments.

Disaster payments made in 1981 for the drought-reduced 1980 crop amounted to about \$653 million and were fairly evenly distributed among producers of feed grains (\$198 million), wheat (\$231 million), and cotton (\$222 million). Rice farmers received about \$2 million. Deficiency payments totaled about \$439 million, mostly going to wheat (\$393 million) and barley (\$45 million) farmers. Farmer-owned reserve storage payments, totaling \$310 million, were concentrated in the fourth quarter, while emergency feed payments totaling \$268 million were mainly concentrated in the first two quarters.

Other cash income of \$1.9 billion included income from farm recreational activities and machine hire and customwork. Revisions based on the 1978 Census of Agriculture for income from machine hire and customwork income reduced this category about \$700 million more from 1980 than it would have been otherwise. Nonmoney income of \$13.9 billion consisted of \$12.7 billion for the imputed rental value of farm dwellings, and \$1.2 billion for the value of farm products consumed directly on the farm. Home consumption of crops totaled \$200 million, while livestock consumption totaled \$1 billion.

Value of Inventory
Change

The value of the change in net farm inventories was estimated at \$5.5 billion for 1981, a sharp turnaround from the revised drop of \$4.3 billion for 1980. The value of the change in crop inventories, estimated at \$5.2 billion, was pushed up by 1981's record-large crops, which replenished inventory stocks drawn down by the drought-reduced 1980 crops. The value of the change in livestock inventories was estimated at \$279 million, reflecting higher cattle inventories only partly counterbalanced by fewer hogs.

Farm Production
Expenses

Total production expenses rose more than 8 percent in 1981 to \$141.6 billion (table 9). The index of production items, interest, taxes, and wage rates jumped more than 8 percent in 1981, the smallest increase since 1977. Input use dropped about 1 percent from 1980 levels (table 7). Expenses for inputs of

Table 9--Total farm production expenses (excluding farm households), 1978-81

Item	1978	1979	1980	1981	Total value change, 1978-81	Percentage value change--	
						1978-81	1980-81
	-----Million dollars-----					-----Percent-----	
Intermediate products							
Farm origin							
Feed	56,455	68,004	72,481	76,044	3,563	34.7	4.9
Livestock	27,254	33,414	32,508	31,777	-731	16.6	-2.2
Seed	14,466	17,766	18,618	18,905	287	30.7	1.5
Other	10,150	12,688	10,539	8,916	-1,623	-12.2	-15.4
Manufactured inputs	2,638	2,960	3,351	3,956	605	50.0	18.1
Fertilizer and lime	15,274	18,493	23,117	25,143	2,026	64.6	8.8
Pesticides	6,619	7,530	9,922	10,074	152	52.2	1.5
Fuel and oil	2,656	3,057	3,317	3,727	410	40.3	12.4
Electricity	4,609	6,264	8,099	9,298	1,199	101.7	14.8
Other	1,389	1,641	1,780	2,045	265	47.2	14.9
Other inputs							
Repair and operation	13,926	16,098	16,856	19,125	2,269	37.3	13.5
Machine hire, customwork, and contract labor	6,227	6,965	7,616	8,118	502	30.4	6.6
Marketing charges	2,604	3,202	3,302	4,070	768	56.3	23.2
Other	1,460	1,757	1,741	2,065	324	41.4	18.6
Interest	3,636	4,174	4,196	4,872	676	34.0	16.1
Real estate							
Nonreal estate	9,531	12,150	15,140	18,967	3,827	99.0	25.3
Other	4,629	5,574	6,685	8,129	1,444	75.6	21.6
Wages to hired labor	4,902	6,576	8,455	10,838	2,383	121.1	28.2
Net rent to nonoperator landl							
Capital consumption allowances	7,520	8,484	9,356	9,984	628	32.8	6.7
Business taxes	5,483	6,061	6,510	7,405	895	35.1	13.7
Other	14,833	16,739	18,532	19,994	1,462	34.8	7.9
Total production expenses	3,339	3,632	3,891	4,224	333	26.5	8.6
Addenda:							
Total cash production expenses	97,161	115,071	125,910	136,618	10,708	40.6	8.5
Other	81,703	97,628	106,605	115,802	9,197	68.0	8.6

nonfarm origin rose 12 percent and were responsible for nearly all of the rise in total expenses. Outlays for farm origin inputs declined 2 percent overall.

Farm origin expenses Outlays for feed rose 2 percent to \$19 billion. The index of prices paid for all feed rose about 8 percent in 1981 as the prices of feed ingredients (corn, sorghum, and soymeal, for example) increased mostly due to the effects of the 1980 drought. Feed prices fell from May to November because of the influence of the record-high 1981 crop output. Feed prices, although declining, remained high until late in the year. Feed use fell about 6 percent because of reduced cattle placements in feedlots and a continued reduction in the hog inventory.

Purchases of livestock for feeder animals and herd replacements declined about 8 percent overall in 1981 despite a 7-percent reduction in feeder livestock prices. As a result, the value of livestock purchases fell 15 percent to \$8.9 billion, the second consecutive annual decline. Continued high feed costs, high interest rates, a weakening economy, poor cattle feeding margins, and a pessimistic outlook for returns in 1982 dropped choice yearling steer feeder prices at Kansas City 12 percent to \$66.24 per cwt. Feeder pig prices rose 21 percent to \$76.79 per cwt, and broiler chick prices increased 6 percent to \$16.49 per hundred birds.

Seed expenses rose 18 percent in 1981 to \$4 billion as seed prices increased 17 percent triggered by the 1980 drought-reduced seed production. Prices were sharply higher for seeds for potatoes (up 124 percent), peanuts (up 111 percent), soybeans (up 35 percent), and hybrid corn (up 14 percent). Seed use rose slightly in 1981 as total acreage planted grew 3 percent; some localized reseeding of crops was necessary because of poor weather.

Nonfarm origin expenses Outlays for nonfarm origin inputs rose 12 percent and accounted for more than 77 percent of total farm expenses, up from 75 percent in 1980 and 64 percent in 1972. As in 1980, the larger share resulted from large gains in interest charges and the costs of manufactured inputs. Expenses for manufactured inputs (fuel and energy, fertilizer, and chemicals) rose 9 percent in 1981 to \$25.1 billion.

Fuel and pesticide expenses. Fuel expenses increased 15 percent to \$9.3 billion when prices for gas and diesel increased. Prices for bulk delivery of regular-leaded gasoline rose 12 percent to an average of \$1.29 per gallon, while diesel fuel increased 17 percent to \$1.16 per gallon. Pesticide expenses rose 12 percent to \$3.7 billion as prices for herbicides and insecticides rose 8 percent and use increased about 4 percent. Use was up because of increased acreage and record crop output.

Fertilizer. Outlays for fertilizers increased only 2 percent in 1981 to \$10.1 billion. Fertilizer prices rose 7 percent overall with nitrogen and potash prices rising and phosphate prices falling. The rise in fertilizer expenses was held down by a

reduction in the use of potash and phosphates, offsetting a small increase in nitrogen use and leaving total fertilizer use down about 6 percent for the year.

Interest expenses. Interest expenses rose substantially in 1981, accounting for 35 percent of the \$11.2-billion rise in total expenses. Total interest expenses rose 25 percent to \$19.7 billion with short-term interest up 28 percent to \$10.8 billion and mortgage interest up 22 percent to \$8.9 billion (table 10). Average nonreal estate debt outstanding increased 12 percent to \$80 billion, and the average interest rate on outstanding nonreal estate debt rose 16 percent to 12.32 percent. Average real estate debt outstanding increased 11 percent to \$93 billion, and the average interest rate on outstanding real estate debt rose to 9.15 percent. Debt outstanding increased as cash-poor farmers needed to finance continuing operations with either short-term debt, debt secured with farm real estate, or refinancing of farm real estate. Average interest rates on outstanding debt rose as that portion of debt which came due was refinanced at higher interest rates (table 11).

Rent, leasing, customwork, and hired transportation. Leasing, machine hire, customwork, and hired transportation expenses increased 27 percent to \$4.1 billion in 1981 after declining 3 percent in 1980 (table 12). Machine hire and customwork of \$2.5 billion is composed of combining and harvesting (46 percent of the total), hay and feed mowing and baling (22 percent), and other customwork for feed grinding and mixing and cropland preparation (32 percent). Combining and harvesting costs rose because of the large amounts of grain and cotton harvested. Total harvested acreage increased 15 million acres in 1981. Many of these services were provided to farmers by other farmers. Machine hire and customwork income earned by farm operators ranged from 71 percent to 81 percent of machine hire and customwork expenses of farm operators from 1976 to 1981 (table 12).

Monitoring leasing expenses and customwork in the farm production expense series is statistically difficult because the provision of leasing services often entails the physical provision of an input, such as the custom application of fertilizer or pesticide. In past farm surveys, many farmers could not separate the value of the custom application from the value of the fertilizer applied. As a result of their nonresponses, farmers are not requested in current farm surveys to separate the value of custom application from the value of fertilizer supplied.

Leasing may be used as a substitute for capital expenditures and can lessen farmers' cash flow requirements. In 1981, a year of declining cash incomes, machinery and motor vehicle leasing expenses increased 14 percent to \$409 million and capital expenditures decreased 3 percent. In 1979, a year of high farm income, machinery and motor vehicle leasing expenses declined 8 percent and capital expenditures increased 14 percent,

Table 10--Total outstanding farm debt (excluding farm households), Jan. 1, 1977-82

Year	Real estate debt <u>1/</u>	Nonreal estate debt excluding CCC loans <u>2/</u>	Price support and storage loans made or guaranteed by CCC	Total <u>1/</u> , <u>2/</u>	
				Excluding CCC loans	Including CCC loans
<u>Million dollars</u>					
1977	51,488	42,920	1,040	94,408	95,448
1978	58,071	48,643	4,540	106,714	111,254
1979	64,602	56,940	5,666	121,542	127,208
1980	75,461	66,950	5,070	142,411	147,481
1981	84,064	74,090	4,978	158,154	163,132
1982 <u>3/</u>	93,318	80,256	8,008	173,574	181,582
<u>Change from--</u>					
1977 to 1978	6,583	5,723	3,500	12,306	15,806
1978 to 1979	6,531	8,297	1,126	14,828	15,954
1979 to 1980	10,859	10,010	-596	20,869	20,273
1980 to 1981	8,603	7,140	-92	15,743	15,651
1981 to 1982 <u>3/</u>	9,254	6,166	3,030	15,420	18,450
<u>Percent</u>					
<u>Change from--</u>					
1977 to 1978	12.8	13.3	336.5	13.0	16.6
1978 to 1979	11.2	17.1	24.8	13.9	14.3
1979 to 1980	16.8	17.6	-10.5	17.2	15.9
1980 to 1981	11.4	10.7	-1.8	11.1	10.6
1981 to 1982 <u>3/</u>	11.0	8.3	60.9	9.8	11.3
<u>Distribution:</u>					
1977	54.0	45.0	1.1	98.9	100.0
1978	52.2	43.7	4.0	96.0	100.0
1979	51.0	44.9	4.1	95.9	100.0
1980	51.4	45.6	3.1	96.9	100.0
1981	51.7	45.6	2.7	97.3	100.0
1982 <u>3/</u>	51.4	44.2	4.4	95.6	100.0

1/ Excludes debt on operators dwellings. 2/ Excludes debt for nonfarm purposes. 3/ Preliminary.

Table 11--Average interest rates on business and farm borrowings, 1977-81

Quarter	Business loans		Farm Credit System									
	at banks		Farm loans at banks					Nonreal estate farm loans				
	Prime rate	Average, all banks	Chicago	Kansas City	Dallas	Chicago	Kansas City	Dallas	Minneapolis	Other banks	Large banks	Production Credit Associations
1977												
-Q1	6.35	7.6	8.7	8.8	9.3	8.8	8.9	9.3	9.1	8.9	8.8	8.2
-Q2	6.35	7.6	8.7	8.8	9.3	8.8	9.0	9.2	9.2	8.9	8.7	8.1
-Q3	6.86	7.9	8.7	8.8	9.3	8.8	9.0	9.2	9.2	8.9	8.7	7.9
-Q4	7.90	8.6	8.8	8.9	9.3	8.9	9.0	9.2	9.2	9.0	9.1	8.0
1978												
-Q1	8.16	8.9	8.9	8.9	9.4	8.9	9.0	9.4	9.2	9.1	9.2	8.4
-Q2	8.16	9.1	8.9	8.9	9.4	9.0	9.1	9.4	9.2	9.2	9.3	8.7
-Q3	9.20	10.0	9.1	9.1	9.5	9.2	9.2	9.5	9.4	9.3	9.6	9.0
-Q4	10.78	11.4	9.4	9.3	9.7	9.5	9.4	9.7	9.5	10.0	10.4	9.2
1979												
-Q1	12.09	12.2	10.1	9.9	10.1	10.2	9.9	10.1	10.2	10.4	11.0	10.0
-Q2	12.09	12.3	10.5	10.2	10.2	10.5	10.3	10.2	10.4	10.7	11.2	10.6
-Q3	12.09	12.3	10.8	10.4	10.3	10.9	11.1	10.3	10.8	10.9	11.3	10.9
-Q4	16.39	15.8	11.7	11.5	11.4	11.7	11.6	11.3	11.8	13.1	13.6	11.0
1980												
-Q1	16.39	15.7	13.5	13.0	13.1	13.6	13.1	13.0	13.6	13.7	14.1	12.1
-Q2	18.81	17.8	17.1	16.5	16.2	17.1	16.5	15.8	16.4	17.1	17.4	13.7
-Q3	11.30	11.6	14.0	14.0	13.2	14.0	14.1	13.2	15.3	13.7	13.5	13.3
-Q4	15.56	15.6	14.3	14.0	13.3	14.3	14.1	13.3	14.0	15.3	15.5	12.0
1981												
-Q1	20.56	19.8	17.3	16.9	18.6	17.4	17.1	18.4	17.6	17.5	17.9	12.9
-Q2	19.90	19.9	16.5	16.3	17.6	16.5	16.3	17.4	17.0	17.5	17.9	14.2
-Q3	21.55	21.0	17.7	17.4	19.2	17.8	17.4	19.0	18.9	19.1	19.6	15.1
-Q4	18.54	17.4	18.6	18.1	19.7	18.6	18.1	19.4	18.9	18.7	18.8	15.8

Source: Melichar, Emanuel, and Paul T. Balides. Agricultural Finance Databook. Board of Governors of the Federal Reserve System, Division of Research and Statistics, Washington, D.C.

indicating cash saved from investment credit and depreciation are important to farmers. The cash flow generated from the investment tax credit and depreciation may more than offset the cash saved by leasing for many farmers, even in years of declining farm income. The relatively low amount (\$409 million) of machinery leasing expenses in 1981 and high book value depreciation reported by farmers to the Internal Revenue Service (IRS) seems to support this supposition.

Unit Costs of Pro- ducing Crops and Livestock

In addition to looking at production expenses on an aggregate basis, USDA also calculates expenses on a per acre or head basis for the major crop and livestock commodities. Costs of production and total farm production expenses are not synonymous. Total farm production expenses are allocated by State but are not broken down by commodity. Costs of production for the various crop and livestock commodities in tables 13 and 14 also include additional charges for the operators' labor, management, and capital.

Costs of production for 11 major U.S. crops rose by an average of 14.6 percent per acre in 1981. The average cost per acre, including land, increased by 11 percent for corn, 16 percent for sorghum, 13 percent for wheat, 9 percent for rice, 10 percent for soybeans, and 21 percent for cotton (table 13).

Costs per acre rose significantly following the drought-reduced 1980 crop because the near-record yields resulted in increased machinery, wage, and drying costs. Although costs per acre jumped, the yield increases caused per unit costs to fall for all crops except wheat and oats. Per unit costs declined the most for peanuts (23 percent) and sorghum (20 percent).

Costs of production, excluding land, increased for all livestock commodities except for fed cattle. Fed cattle costs of production per cwt in the western United States declined from \$70.79 in 1980 to \$69.33 in 1981, a 2-percent drop (table 14). The costs of feeder cattle, which accounted for 60 percent of fed cattle production costs, declined in 1981, reducing total production costs. But this also squeezed the returns to feeder cattle producers. The record 1981 grain and soybean crops followed 2 years of sharply higher feed costs and reduced feed prices during the second half of 1981. Hog farrow-to-finish production costs per cwt rose 9.5 percent to \$63.82 in 1980. Dairy production costs per cwt of milk increased from \$11.17 in 1979 to \$14.13 in 1981, even though milk production per cow increased 6 percent from 1980.

FARM ASSETS AND LIABILITIES

Farm equity excluding farm households was projected at \$770 billion as of January 1, 1983, a decline in nominal terms of about 4 percent. Total assets in 1982 likely declined 2 percent and total liabilities including CCC loans increased 7 percent. The resulting debt-to-asset ratio of 20 percent indicates that many farmers will have difficulty obtaining loans in 1983.

Table 13--Crop production costs, 1975-81

Item	1975	1976	1977	1978	1979	1980	1981
	Dollars						
Corn:							
Per acre, excluding land	137.13	141.11	147.00	150.23	178.62	212.01	245.24
Per acre, including land	191.33	187.69	194.56	199.20	237.94	277.59	309.27
Per bushel, excluding land	1.60	1.62	1.66	1.49	1.63	2.35	2.24
Per bushel, including land	2.23	2.15	2.20	1.98	2.13	3.05	2.90
Sorghum:							
Per acre, excluding land	88.96	91.59	95.68	97.68	120.33	139.85	162.41
Per acre, including land	113.56	110.69	118.24	119.58	150.01	166.52	192.26
Per bushel, excluding land	1.93	1.99	1.77	1.84	1.96	3.24	2.58
Per bushel, including land	2.47	2.41	2.19	2.25	2.48	4.07	3.25
Barley:							
Per acre, excluding land	70.11	75.39	74.44	92.30	114.70	130.14	146.64
Per acre, including land	95.31	98.82	96.25	118.65	143.08	161.03	179.24
Per bushel, excluding land	1.72	1.83	1.88	2.01	2.40	3.01	2.97
Per bushel, including land	2.34	2.40	2.43	2.59	3.04	3.79	3.25
Oats:							
Per acre, excluding land	48.94	50.51	53.25	72.90	86.22	101.47	113.03
Per acre, including land	74.14	71.67	77.96	95.79	113.81	137.04	150.71
Per bushel, excluding land	1.13	1.25	.99	1.46	1.69	2.17	2.25
Per bushel, including land	1.71	1.78	1.45	1.91	2.30	2.81	3.07
Wheat:							
Per acre excluding land	68.49	69.11	68.30	74.30	90.98	109.38	126.06
Per acre including land	91.48	91.22	89.27	98.46	121.71	140.55	158.38
Per bushel, excluding land	2.36	2.55	2.47	2.48	2.81	3.66	4.00
Per bushel, including land	3.15	3.37	3.22	3.29	3.74	4.81	5.21
Rice:							
Per acre, excluding land	303.33	295.10	258.14	280.72	322.76	374.81	421.04
Per acre, including land	355.11	348.09	319.44	338.61	398.10	451.06	489.36
Per hundredweight, excluding land	6.66	6.31	5.33	6.31	7.06	8.68	8.74
Per hundredweight, including land	7.80	7.48	6.72	7.61	8.29	10.07	10.06
Soybeans:							
Per acre, excluding land	83.42	86.44	91.85	99.13	115.05	127.67	147.61
Per acre, including land	125.00	131.80	143.64	150.23	169.44	187.66	206.14
Per bushel, excluding land	2.97	3.43	3.04	3.39	3.61	4.93	4.90
Per bushel, including land	4.45	5.23	4.75	5.14	5.15	7.19	7.01
Sunflowers:							
Per acre, excluding land	N/A	N/A	N/A	N/A	90.93	104.20	118.34
Per acre, including land	N/A	N/A	N/A	N/A	116.07	130.61	147.11
Per hundredweight, excluding land	N/A	N/A	N/A	N/A	6.89	10.85	10.20
Per hundredweight, including land	N/A	N/A	N/A	N/A	8.80	13.78	12.91
Peanuts:							
Per acre, excluding land	283.89	292.17	357.38	377.91	405.85	439.24	598.77
Per acre, including land	340.07	347.23	448.06	471.72	508.34	535.08	721.76
Per pound, excluding land	.112	.119	.147	.145	.157	.288	.228
Per pound, including land	.134	.142	.184	.181	.198	.357	.275
Flax:							
Per acre, excluding land	49.84	51.81	53.01	57.19	67.90	75.20	86.96
Per acre, including land	64.84	64.36	68.13	73.23	86.12	96.73	109.85
Per bushel, excluding land	5.48	7.30	4.95	4.61	5.14	7.37	7.19
Per bushel, including land	7.13	9.07	6.36	5.91	6.57	9.60	9.30
Cotton:							
Per acre, excluding land	214.97	245.11	261.56	262.12	317.19	346.43	420.84
Per acre, including land	246.28	282.97	298.62	299.87	361.07	383.06	462.22
Per pound, excluding land	.450	.563	.518	.672	.631	.943	.798
Per pound, including land	.512	.650	.591	.769	.721	1.060	.899

N/A = not available.

Table 14--U.S. livestock production costs (excluding land), 1976-81

Commodity	1976	1977	1978	1979	1980	1981
	<u>Dollars</u>					
Western fed cattle production costs, per cwt, all sizes:						
Variable costs	N/A	39.92	47.16	65.95	69.64	68.05
Total costs	N/A	40.70	48.02	66.96	70.79	69.33
Midwestern fed cattle production costs, per cwt, all sizes:						
Variable costs	N/A	38.84	41.85	59.67	68.92	67.08
Total costs	N/A	47.97	51.70	70.85	81.62	81.32
Cow-calf production costs, per cwt, all sizes:						
Variable costs	37.37	48.80	49.23	55.40	60.79	68.83
Total costs	74.33	95.16	101.95	129.77	147.87	161.31
Feeder pig production costs, per cwt, all sizes:						
Variable costs	45.09	47.17	48.66	55.06	60.77	66.17
Total costs	93.97	87.73	91.65	104.26	109.58	120.87
Feeder pig finishing production costs, per cwt, all sizes:						
Variable costs	47.18	38.65	42.52	49.08	41.70	48.70
Total costs	57.89	48.18	52.39	60.11	52.92	61.15
Farrow-to-finish production costs, per cwt, all sizes:						
Variable costs	30.67	30.87	31.39	35.36	38.63	41.85
Total costs	49.17	47.55	48.84	55.17	55.27	63.82
Sheep production costs, per ewe, all sizes:						
Variable costs	N/A	24.94	27.65	31.92	36.23	40.76
Total costs	N/A	48.42	56.34	66.49	71.10	79.09
Dairy production costs, per cwt, all sizes:						
Variable costs	N/A	N/A	N/A	7.70	8.74	9.18
Total costs	N/A	N/A	N/A	11.17	13.04	14.13

N/A = not available.

Real estate, the major portion of total asset value, is expected to decline in value to \$724 billion as of January 1, 1983, a drop of about 4 percent, marking the second consecutive year that real estate values have dropped. Low farm income and high interest rates are major causes.

The 4-percent increase in real estate debt is well below the recent annual average of 17 percent between 1976 and 1982. Nonreal estate debt including CCC loans increased 9 percent during 1982. CCC loans showed the largest percentage increase due to the second consecutive year of plentiful crop production and low prices.

Farm asset values excluding farm households totaled \$984 billion on January 1, 1982, an increase of \$333 million from January 1, 1981 (table 15), but farm debt outstanding increased 11 percent, reaching \$182 billion. The increase in debt and limited growth in asset values resulted in equity declining 2 percent, the first decline in the farm sector's net worth since 1954. Average per farm equity fell \$7,603 during 1981. Equity per farm was \$329,095 on January 1, 1982.

The debt-to-asset ratio, excluding farm households, increased from 16.6 to 18.5 percent during 1981. That was the largest jump on record, causing the ratio to reach its highest level since 1942. During the seventies, the debt-to-asset ratio varied between 16.2 and 18.1 percent based on the current replacement value of farm assets. For comparison, the debt-to-asset ratio in the manufacturing and mining industries in the fourth quarter of 1981 was 51 percent and 61 percent, respectively, based on the book value of the assets. A farm sector debt-to-asset ratio based on the book value of farm assets is not available.

The value of farm real estate, which accounts for about 75 percent of farm assets, declined 1 percent during 1981. The per-acre value of farm real estate including operator dwellings dropped from \$795 on February 1, 1981, to \$788 on April 1, 1982. At the beginning of 1982, the average per farm value of farm real estate excluding farm households was \$310,211; 10 years earlier, it was \$75,970 per farm.

The value of physical assets other than farm real estate was about 20 percent of the total farm asset value in 1981. Falling livestock prices caused the value of livestock inventory to drop 12 percent. Increased prices of new and used machinery were responsible for the 9-percent rise in machinery values because depreciation exceeded capital expenditures by \$2.5 billion (table 15). The value of crop inventories was slightly higher than the previous year when the increase in quantities placed under storage offset price declines.

Farmers' financial assets reached \$45 billion on January 1, 1982, about 3 percent of total asset value. Financial assets increased 6 percent from January 1, 1981, led by a 10-percent increase in the net worth of farmers' cooperatives.

Table 15--Change in farm balance sheet account (excluding farm households), 1981

Item	Balance sheet of the farming sector, Jan. 1, 1982	Balance sheet of the farming sector, Jan. 1, 1981	Total value change	Due to transactions 1/					Total trans- actions 2/	Due to asset valuations 3/
				Capital acquired	Capital consumption	Capital assets transferred	Debt incurred			
Million dollars										
Assets										
Real estate assets	983,597	983,264	333	28,731	15,994	-912	0	4/ 9,649	4/-9,316	
Land	755,933	760,009	-4,016	4,996	4,902	-912	0	1,006	-5,022	
Service structures	693,996	695,643	-1,647	1,544	0	-912	0	2,456	-4,103	
	61,997	64,366	-2,369	3,452	4,902	0	0	-1,450	-919	
Nonreal estate assets	195,629	193,736	4,349	23,735	15,092	0	0	8,643	4/-4,294	
Machinery and motor vehicles	105,487	97,024	8,463	12,607	15,092	0	0	-2,485	10,948	
Livestock and poultry	53,617	60,808	-7,191	279	0	0	0	279	-7,470	
Crops	36,525	35,904	621	4/ 8,393	0	0	0	4/ 8,393	4/-7,772	
Financial assets	31,975	29,519	2,456	2,456	0	0	0	2,456	0	
Claims	983,597	983,264	333	0	0	0	0	0	0	
Liabilities	181,582	163,132	18,450	0	0	0	18,450	-18,450	0	
Real estate debt	93,318	84,064	9,254	0	0	0	9,254	-9,254	0	
Nonreal estate debt	80,256	74,090	6,166	0	0	0	6,166	-6,166	0	
CCC debt	8,008	4,978	5/ 3,030	0	0	0	3,030	-3,030	0	
Equity	802,015	820,132	-18,117	28,731	19,994	-912	18,450	-8,801	-9,316	

1/ From capital flows account, table 24.

2/ Capital acquired less capital consumption, capital assets transferred, and debt incurred.

3/ Total value change less total transactions.

4/ Adjusted for CCC loan activity of \$3,144-million and \$5,249-million farm inventory crop change. Crop inventories in the balance sheet include crops under CCC loans because debt outstanding includes CCC loans. Crop inventory change in the farm income statement excludes CCC stocks to prevent double accounting because net CCC loans made are counted as crop cash receipts. Crop inventories in the change in balance sheet account must therefore be adjusted for the net change in CCC loans outstanding to prevent double accounting of capital gains.

5/ Includes a \$3,144-million increase for crops placed under loan and a \$114-million decrease for storage facility loans.

The total farm debt increase of \$18.5 billion (including CCC loans) was the second largest on record, exceeded only by the 1979 increase of \$20.3 billion (table 10). Three lenders, the Federal land banks, Farmers Home Administration (FmHA), and the CCC, accounted for 67 percent of the total debt increase.

Farm real estate debt constituted about half of the total debt outstanding. Farm real estate debt outstanding increased 11 percent in 1981 to reach \$93 billion on Jan. 1, 1982 (table 16). Lending from the Federal land banks increased 21 percent, but commercial bank lending secured by farm real estate loans declined 4 percent (table 16). Borrowing from the Federal land banks has been substantially increasing within the last 2 years for two reasons. First, the Federal land banks have the lowest cost funds because of the FCA policy of basing interest rates on their average cost of funds (table 11). Commercial bank interest rates are much higher than Production Credit Associations or Federal land banks. Second, the restructuring of short-term debt into long-term debt begun in 1980 to obtain more favorable repayment terms continued in 1981. Farmers reported using 14.8 and 14 percent of their 1980 and 1981 Federal land bank borrowings, respectively, to refinance nonreal estate debt (table 17). This ratio averaged 10.7 percent from 1972 to 1979.

Nonreal estate farm debt (excluding CCC loans) increased 12 percent to total \$80 billion on Jan. 1, 1982 (table 18). Lending from the FmHA increased \$2.4 billion, because loans under the economic emergency program more than doubled from 1980 (table 19). Because of declining crop prices in late 1981, farmers have \$8 billion under CCC storage, a \$3-billion increase from Jan. 1, 1981. Commercial banks, at 4 percent, had the smallest percentage increase in their nonreal estate loans outstanding of all lenders.

Cash Flows

Cash flow analysis is concerned with the adequacy of current cash flows to meet family living needs, acquire farm production capital, pay operating expenses, and repay loans. A primary concern is the current reliance on annual borrowing to provide an ever-increasing share of cash inflows. Interest payments in 1981 reached 123 percent of annual net farm borrowing, almost double the ratio of 65 percent in 1977, reflecting the impacts of the cost-price squeeze (table 20).

In response to declining cash farm income and the increasing burden of servicing farm debt, farmers have reduced farm expenditures for machinery and buildings. Purchases of farm real estate may have also declined. Estimates of annual borrowing for real estate purchases are shown in table 21. Farm borrowing data, by purpose of loan, are not annually available except for the Federal land banks and the FmHA. Estimates of net borrowing to purchase farm real estate from the Federal land banks in table 17 and the FmHA in table 19 are combined with net borrowing secured by farm real estate from life insurance companies, commercial banks, individuals, and others in table 21 to estimate total net borrowing to purchase farm real estate.

Table 16--Outstanding farm real estate debt (excluding farm households), Jan. 1, 1977-81 1/

[illegible]

1/ Excludes debt on operators dwellings.

2/ Preliminary.

As shown in table 21, borrowing to purchase farm real estate has declined for 2 years, equaling \$5.7 billion in 1979 before dropping to \$4.5 billion in 1980 and \$3.8 billion in 1981, when farmers may have reduced their farm real estate purchases.

In the 1979 Agriculture Census of Farm Finance, operators and landlords reported purchasing \$8.8 billion of farm real estate, borrowing \$6.2 billion to finance farm real estate purchases, and paying \$2.6 billion with cash on hand. Real estate and nonreal estate debt in the balance sheet refer to the security

Table 17--Percentage distribution of Federal land bank loans made, 1972-81

Type of loan	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Purchase real estate Refinance:										
Federal land bank loans	31.3	36.6	35.8	30.9	34.6	31.6	31.5	33.8	30.1	30.6
Mortgage loans held by others	20.8	15.5	14.7	17.0	18.7	20.8	18.5	19.8	18.3	19.0
Short-term loans held by others	16.2	19.0	17.8	19.4	15.2	15.1	16.3	15.1	16.5	16.4
Improve land and buildings	11.5	8.0	10.0	12.3	10.5	12.6	10.8	9.8	14.8	14.0
Operating expenses 1/	9.5	11.0	11.6	9.9	10.9	10.0	11.4	11.9	9.9	8.8
Other purpose 2/	3.3	3.0	3.5	3.8	3.1	3.0	2.8	2.7	2.8	2.6
	7.4	6.9	6.6	6.7	7.0	6.9	8.7	6.9	7.6	8.5
All purposes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Addenda:										
Net increase in Federal land bank debt 3/	1,062	1,689	2,247	2,324	2,298	2,691	2,975	4,596	5,779	6,998
Percentage for farm real estate purchases	31.3	36.6	35.8	30.9	34.6	31.6	31.5	33.8	30.1	30.6
Net increase in Federal land bank debt to purchase farm real estate	332	618	804	718	795	850	931	1,553	1,739	2,141

1/ Purchase livestock and machinery and for general operating expenses.

2/ Primarily land bank stock but includes miscellaneous purposes.

3/ From table 16.

Source--Farm Credit Administration, Characteristics of Federal Land Bank Loans, 1981, Economic Analysis Division, Stat. Bull. 30, Washington, D.C., October 1982.

Table 18--Outstanding farm nonreal estate debt (excluding farm households), Jan. 1, 1977-82 1/

Year	Owed to reporting institutions (excluding CCC)					Owed to individuals and others 2/	Total excluding CCC loans	Price support and storage loans made or guaranteed by CCC	Total including CCC loans	
	All operating bank	Production Credit Associations	Federal intermediate credit banks	Farmers Home Administration						Total
					stration					
Million dollars										
1977	22,002	11,744	368	1,652	35,766	7,154	42,920	1,040	43,960	
1978	24,295	12,968	374	2,764	40,401	8,242	48,643	4,540	53,183	
1979	26,718	14,415	509	5,087	46,729	10,212	56,940	5,666	62,606	
1980	29,327	17,567	665	7,905	55,464	11,486	66,950	5,070	72,020	
1981	29,989	19,226	810	10,346	60,371	13,720	74,090	4,978	79,069	
1982 3/	31,303	20,625	913	12,718	65,557	14,700	80,256	8,008	88,265	
Change from--										
1977 to 1978	2,293	1,224	6	1,112	4,635	1,088	5,723	3,500	9,223	
1978 to 1979	2,423	1,447	135	2,322	6,327	1,970	8,297	1,126	9,423	
1979 to 1980	2,610	3,152	156	2,818	8,735	1,274	10,010	-596	9,414	
1980 to 1981	661	1,658	145	2,441	4,907	2,234	7,140	-92	7,049	
1981 to 1982	1,314	1,399	103	2,372	5,186	980	6,166	3,030	9,196	
Percent										
Change from--										
1977 to 1978	10	10	2	67	13	15	13	337	21	
1978 to 1979	10	11	36	84	16	24	17	25	18	
1979 to 1980	10	22	31	55	19	12	18	-11	15	
1980 to 1981	2	9	22	31	9	19	11	-2	10	
1981 to 1982	4	7	13	23	9	7	8	61	12	
Distribution:										
1977	50	27	1	4	81	16	98	2	100	
1978	46	24	1	5	76	16	92	8	100	
1979	43	23	1	8	75	16	91	9	100	
1980	41	24	1	11	77	16	93	7	100	
1981	38	25	1	13	77	17	94	6	100	
1982	36	23	1	14	74	17	91	9	100	

1/ Excludes debt for nonfarm purposes. 2/ Data for 1978-82 include farm loans owed to the Small Business Administration.
3/ Preliminary.

Table 21--Financing of farm real estate purchases, 1975-81

Item	1975	1976	1977	1978	1979	1980	1981
<u>Million dollars</u>							
Farm real estate purchased by operators and landlords	N/A	N/A	N/A	N/A	1/8,749	N/A	N/A
Financing of farm real estate purchases:							
Net farm borrowing to purchase farm real estate							
Federal land banks	718	795	850	931	1,553	1,739	2,141
Farmers Home Administration	137	91	262	270	547	449	335
Life insurance companies ^{2/}	398	626	1,313	1,535	1,561	707	171
Commercial banks ^{2/}	304	441	991	624	71	128	-311
Individuals and others ^{2/}	1,217	1,421	1,289	1,268	1,922	1,437	1,457
Total	2,774	3,374	4,705	4,628	5,654	4,460	3,793
Amount paid in cash	N/A	N/A	N/A	N/A	1/2,577	N/A	N/A
Statistical discrepancy	N/A	N/A	N/A	N/A	518	N/A	N/A
Total financing of farm real estate purchases	N/A	N/A	N/A	N/A	1/8,749	N/A	N/A
Addenda:							
Total farm borrowing ^{3/}	8,373	10,507	12,306	14,828	20,869	15,743	15,420
Farm borrowing to purchase farm real estate as a percentage of total farm borrowing	33	32	38	31	27	28	25
<u>Percent</u>							

N/A = not available.

^{1/} From 1979 Agriculture Census of Farm Finance. ^{2/} Assumes all the net increase in debt from life insurance companies, commercial banks, individuals, and others is for real estate purchases. ^{3/} From table 10. Excludes CCC loans.

of the loan and not to the purpose. The statistical discrepancy of \$518 million in table 21 between the 1979 Agriculture Census of Finance benchmark and the annual estimation methodology arises because nonreal estate borrowing was probably used for farmland purchases. Despite the statistical discrepancy, the annual borrowing estimates in table 21 provide an indication of the trends in farm real estate purchases and borrowing not otherwise available. A percentage of annual nonreal estate borrowing could have been allocated to the annual net borrowing for real estate purchases estimates, which may have improved the annual borrowing for real estate purchases estimates and eliminated the statistical discrepancy for 1979. However, by highlighting the statistical discrepancy in table 21, readers are forewarned of the limitations of the annual borrowing to purchase real estate estimates. The statistical discrepancy also stresses the importance and need for annual borrowing by purpose data, a data gap identified at the 1977 USDA Workshop on Farm Sector Financial Accounts.

Farm real estate purchases by operators and landlords were collected twice in the the 1970 and 1979 Agriculture Censuses of Farm Finance. The value of farm real estate purchased by operator and landlords amounted to \$2.3 billion in 1970 compared with \$8.8 billion in 1979.

Borrowing to finance outlays for machinery and buildings and current operating expenditures is estimated in table 22 by subtracting net borrowing to purchase farm real estate from total net farm borrowing for all purposes. As shown, farmers have been paying for about 90 percent of current outlays with funds on hand and with funds borrowed and repaid during the year. The \$8.6-billion increase in farm operating expenses and the \$5.8-billion decline in cash income from farming caused a shift in financing of current outlays in 1981.

In 1980, farmers reduced their reliance on farm borrowing to finance operating expenses in response to high interest rates. Current outlays increased \$7.3 billion in 1980, and cash income from farming decreased \$2.6 billion, a spread of \$9.9 billion (table 23). Despite the decline in net cash farm income in 1980, farmers retained earnings from their income of \$11.3 billion to pay cash for the increased outlays of \$7.3 billion, thus reducing their annual rate of borrowing to finance current outlays from \$15.2 billion in 1979 to \$11.3 billion in 1980, a decrease of \$3.9 billion. Farmers in 1980 were able to reduce their borrowing to finance current outlays by holding down expenditures for real estate, machinery, and, probably, family living.

Farmers tried to maintain their shift to less reliance on borrowing in 1981 even though current outlays increased \$8.6 billion, while cash income from farming dropped \$5.8 billion, a spread of \$14.4 billion. Only 4 percent of the \$8.6-billion increase in 1981 outlays was financed by borrowing because farm families probably reduced their family living expenditures in order to rely less on borrowing (table 23). Given current

Table 23--Changes in financing of capital expenditures
and current operating expenses, 1975-81

Year	Cash income from farming	Current outlays ^{1/}	Financing		
			Net borrowing	Cash on hand ^{2/}	Total financing
Million dollars					
1975	28,477	74,622	5,599	69,023	74,622
1976	28,733	82,357	7,133	75,224	82,357
1977	26,605	88,131	7,601	80,530	88,131
1978	35,264	99,651	10,200	89,451	99,651
1979	37,973	117,502	15,215	102,287	117,502
1980	35,328	124,827	11,283	113,544	124,827
1981	29,514	133,405	11,627	121,778	133,405
Change from--					
1975 to 1976	256	7,735	1,534	6,201	7,735
1976 to 1977	-2,128	5,774	468	5,306	5,774
1977 to 1978	8,659	11,520	2,599	8,921	11,520
1978 to 1979	2,709	17,851	5,015	12,836	17,851
1979 to 1980	-2,645	7,325	-3,932	11,257	7,325
1980 to 1981	-5,814	8,578	344	8,234	8,578

^{1/} Gross capital expenditures and cash production expenses.

^{2/} Includes funds borrowed and repaid during the year.

financial conditions, many farmers in 1983 will probably continue to decrease their farm machinery expenditures and will refinance short-term high interest rate debt with lower cost Federal land bank loans to improve their cash outflow situation.

Capital Flows

Capital expenditures in 1981 for land improvements, motor vehicles, tractors, other machinery and equipment, and buildings for farm production purposes dropped 3 percent to \$17.6 billion (table 24). Except for tractors, high prices blunted purchases, resulting in a decline in total expenditures. The number of wheel tractors sold in 1981 fell about 13 percent to 103,830 units but prices paid for tractors increased substantially, raising tractor expenditures by 3 percent to \$3.8 billion. However, farm machinery and equipment expenditures excluding tractors fell 5 percent to \$6.7 billion. Capital expenditures on all structures and service buildings excluding operators' dwellings fell 10 percent in 1981 to \$6.3 billion. Expenditures for land improvements increased 24 percent to \$1.5 billion,

Table 24--Farm sector capital flows (excluding farm households), selected years

Item	1970	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	Million dollars										
Gross capital expenditures	6,793	7,480	10,172	11,444	12,384	13,968	15,012	17,948	19,874	18,222	17,603
Land improvements	301	303	453	592	1,641	1,400	1,526	1,265	1,126	1,250	1,544
Service structures	1,557	1,482	2,072	2,657	2,090	2,571	2,905	3,944	4,462	3,964	3,452
Tractors	1,123	1,418	1,923	2,236	2,460	2,648	2,776	3,283	3,746	3,687	3,802
Trucks	597	672	733	864	1,083	1,547	1,652	1,829	2,054	1,808	1,628
Automobiles	310	374	410	305	290	409	496	469	484	382	431
Other machinery and equipment	2,888	3,231	4,581	4,790	4,820	5,393	5,657	7,158	8,002	7,131	6,746
Inventory change	6	861	3,406	-1,611	3,400	-2,366	971	1,071	5,613	-4,292	5,528
Crops	-659	416	1,588	-2,065	4,445	-1,684	2,232	2,471	4,757	-5,630	5,249
Livestock	665	445	1,818	454	-1,045	-682	-1,261	-1,400	856	1,338	279
Gross saving ^{1/}	6,799	8,341	13,578	9,833	15,784	11,602	15,983	19,019	25,487	13,930	23,131
Capital consumption allowances ^{2/}	5,850	6,812	7,665	9,129	10,878	11,959	13,510	14,833	16,739	18,532	19,994
Depreciation	5,741	6,681	7,504	9,005	10,711	11,796	13,349	14,655	16,536	18,266	19,729
Service structures	1,163	1,441	1,684	2,107	2,273	2,410	2,964	3,331	3,735	4,305	4,655
Tractors	1,012	1,120	1,264	1,610	2,009	2,359	2,449	2,717	3,176	3,521	3,626
Trucks	617	740	797	871	1,012	1,247	1,538	1,628	1,851	1,858	2,133
Automobiles	355	377	396	408	411	438	575	640	671	671	845
Other machinery and equipment	2,594	3,003	3,363	4,009	5,006	5,342	5,823	6,339	7,103	7,911	8,470
Accidental damage	109	131	161	124	167	163	161	178	203	266	265
Service structures	95	117	147	109	152	148	146	163	187	250	247
Vehicles and machinery	14	14	14	15	15	15	15	15	16	16	18
Net real estate transfers	1,950	1,466	2,342	4,418	4,364	5,074	2,922	1,296	898	-2,028	-912
Net capital formation ^{3/}	-1,001	63	3,571	-3,714	542	-5,431	-449	2,890	7,850	-2,574	4,049
Gross capital disappearance plus net capital formation ^{4/}	6,799	8,341	13,578	9,833	15,784	11,602	15,983	19,019	25,487	13,930	23,131

^{1/} Gross capital expenditures and inventory change. ^{2/} Depreciation and accidental damage. ^{3/} Gross saving less capital consumption allowances and net real estate transfers. ^{4/} Gross capital disappearance equals capital consumption allowances and net real estate transfers.

perhaps encouraged by the 15-million-acre increase in planted acreage.

In response to agricultural export demand, farm sector output and capacity have been increasing due to larger planted acreages, increased livestock production, increased productivity, and sustained high levels of farm saving. The index of farm output increased 31 percent from 1970 to 1981, an annual average rate of 2.6 percent per year (fig. 9). Fertilizer, agricultural chemicals, improved crop varieties, and improved animal breeding are vital to increasing productivity. Savings are also important in increasing farm productivity and capacity output.

Farmers increased their saving rates about 2 to 4 percent above 1980 levels to support the 1981 level of capital expenditures (fig. 11). Gross capital expenditures as a percentage of farm proprietors' cash income increased from 44 percent in 1980 to 48 percent in 1981, a 4-percent increase (table 25). Gross capital expenditures as a percentage of gross cash flow increased from 32 percent in 1980 to 34 percent in 1981, a 2-percent increase (table 25). However, increased savings rates could not compensate for declining cash incomes and gross cash flows which produced capital expenditures decreases.

FARM PRODUCTIVITY

Total U.S. farm output in 1981 bounced back to record levels after the 1980 drought. A 13-percent increase over 1980 was recorded, leaving farm output 5 percent above the 1979 record (fig. 12).

The major categories of livestock established record levels of production in 1981 for the second consecutive year except for meat animals, where production fell about 2 percent. Dairy and poultry products were both up about 3 percent.

Crop production increased 16 percent to a new record due to larger crop acreage, reduced crop failure, and higher yields for most crops and record yields for many. Record-high production was also achieved in 1981 for feed grains, food grains, and vegetables with increases of 25 percent, 19 percent, and 5 percent, respectively. Fruits and nuts was the only crop commodity group with decreased production.

The index of total farm inputs remained the same in 1981 (table 7). The use of farm labor continued to decline slightly while most other major inputs changed very little. The miscellaneous input category rose about 15 percent, and agricultural chemicals increased 3 percent.

Productivity increased 12 percent in 1981 spurred by higher output and the same input level. Inputs used in 1981 were more productive than in 1980 because favorable growing conditions resulted in record production and yields for many commodities. Crop production increases more than offset livestock decreases

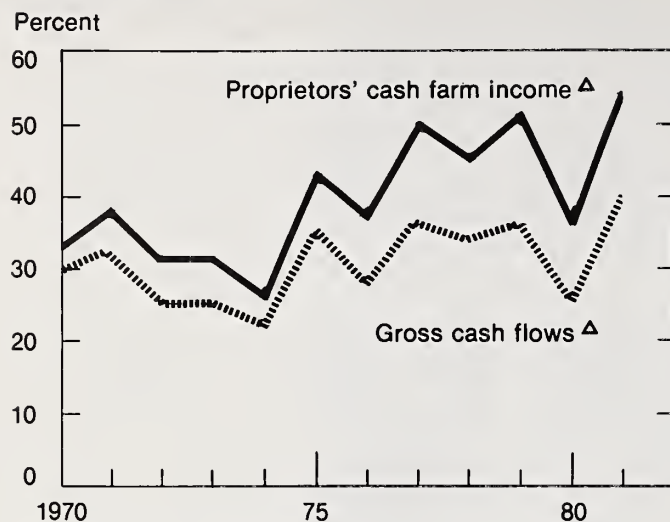
Table 25--Analysis of farm sector gross saving (excluding farm households), 1977-81

Item	1977	1978	1979	1980	1981
<u>Million dollars</u>					
Cash flow summary:					
Net rent to all landlords	5,169	5,483	6,061	6,510	7,405
Cash income from farming	26,065	35,264	37,973	35,328	29,514
Farm proprietors' cash farm income	31,234	40,747	44,034	41,838	36,919
Change in loans outstanding ^{1/}	12,306	14,828	20,869	15,743	15,420
Gross cash flow	43,540	55,575	64,903	57,581	52,339
Saving summary:					
Gross capital expenditures	15,012	17,948	19,874	18,222	17,603
Farm inventory change	971	1,071	5,613	-4,292	5,528
Gross farm saving	15,983	19,019	25,487	13,390	23,131
Addenda:					
Farm proprietors' cash farm income plus inventory change					
Gross cash flow plus inventory change	32,205	41,818	49,647	37,546	42,447
	44,511	56,646	70,516	53,289	57,861
			<u>Percent</u>		
Saving analysis summary:					
Gross capital expenditures as a percentage of--					
Farm proprietors' cash income	48.1	44.1	45.1	43.6	47.7
Gross cash flow	34.4	32.3	30.6	31.7	33.6
Gross farm saving as a percentage of--					
Farm proprietors' cash farm income plus inventory change	49.6	45.5	51.3	35.7	54.4
Gross cash flow plus inventory change	35.9	33.6	36.1	25.1	40.0

^{1/} Excludes net CCC loans.

Figure 11

Farm Sector Saving Rate as a Percentage of Income and Cash Flow

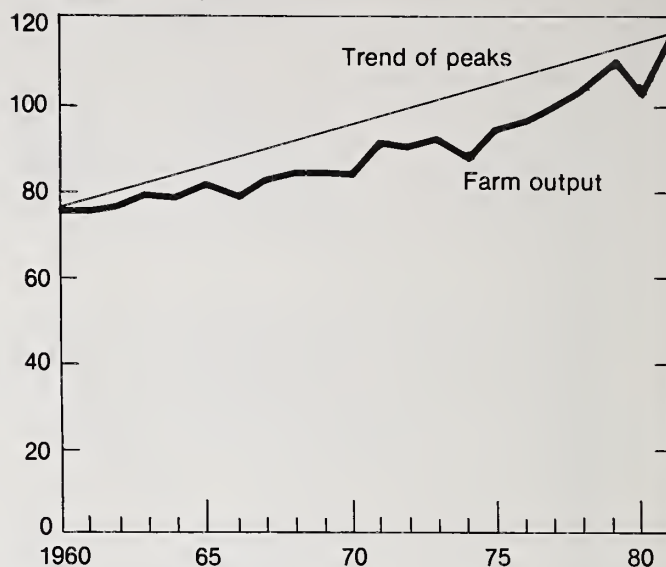


△ Includes inventory change.

Figure 12

Capacity Farm Output

\$ bil. (1967 = 100)



in 1982. Input use in 1982 was about the same as 1981. Output per unit of input was record high in 1982.

FOOD SECTOR DEVELOPMENTS

Personal consumption expenditures for all foods increased 6.3 percent to \$349.7 billion in 1982. Consumers spent 16.1 percent of personal disposable income on foods compared with 16.3 percent 10 years ago and 19.1 percent 20 years ago (table 26).

Consumers spent \$298 billion for foods originating on U.S. farms (table 27). Farmers received about \$84 billion for the farm products used in those foods, which accounted for the largest portion of farm receipts for all agricultural products. Total farm receipts also include receipts for nonfood products, feed and seed sold to other farmers, Government payments, and the value of U.S. agricultural exports. The percentage of cash receipts from domestically produced foods has declined over the years, largely reflecting the growth in exports of feed grains. However, cash receipts are still primarily dependent on consumer expenditures for food. Farmers derived 60 percent of their cash receipts from domestic use of farm foods in 1982 compared with 65 percent in 1972.

Food Marketing Bill

USDA measures consumer expenditures for domestically produced farm foods and the farm value of these foods. The difference, the USDA marketing bill, measures the total charges for transporting, processing, and distributing domestic farm foods

Table 26--Food expenditures in relation to disposable income, 1960-82

Year	: Disposable : personal : income	Personal consumption expenditures for food--						
		At home <u>1/</u>		Away from home <u>2/</u>		Total		
		-----Mil. dol.-----	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.	
1960	:	351,992	56,244	16.0	14,234	4.0	70,478	20.0
1961	:	365,750	57,322	15.7	15,042	4.1	72,364	19.8
1962	:	386,791	57,826	15.0	16,090	4.2	73,916	19.1
1963	:	405,879	58,800	14.5	16,968	4.2	75,768	18.7
1964	:	440,587	62,187	14.1	17,969	4.1	80,156	18.2
	:							
1965	:	475,779	66,797	14.0	18,980	4.0	85,777	18.0
1966	:	513,690	72,397	14.1	20,210	3.9	92,607	18.0
1967	:	547,911	73,960	13.5	20,997	3.8	94,957	17.3
1968	:	593,418	79,357	13.4	23,269	3.9	102,626	17.3
1969	:	638,933	84,869	13.3	25,252	4.0	110,121	17.2
	:							
1970	:	695,288	91,956	13.2	27,686	4.0	119,642	17.2
1971	:	751,751	94,330	12.5	29,061	3.9	123,391	16.4
1972	:	810,322	100,613	12.4	31,819	3.9	132,432	16.3
1973	:	914,495	112,193	12.3	35,699	3.9	147,892	16.2
1974	:	998,345	127,296	12.8	40,191	4.0	167,487	16.8
	:							
1975	:	1,096,068	139,407	12.7	45,813	4.2	185,200	16.9
1976	:	1,194,359	149,286	12.5	51,162	4.3	200,448	16.8
1977	:	1,314,019	160,365	12.2	56,989	4.3	217,354	16.5
1978	:	1,473,991	176,987	12.0	63,951	4.3	240,938	16.3
1979	:	1,650,155	199,789	12.1	72,457	4.4	272,246	16.5
	:							
1980	:	1,824,076	221,542	12.1	78,435	4.3	299,977	16.4
1981	:	2,029,148	242,914	12.0	86,149	4.2	329,063	16.2
1982 <u>3/</u>	:	2,173,400	255,045	11.7	94,686	4.4	349,731	16.1
	:							

1/ Includes purchases for off-premise consumption from foodstores and food produced and consumed on farms. Includes imported food.

2/ Includes purchased meals and beverages from public eating places and food furnished to commercial and Government employees. Includes imported food.

3/ Preliminary.

Table 27--Expenditures for domestically produced food,
marketing bill, and farm value, at home and
away-from-home markets, selected years

Item	Total	For food at food- stores	Eating away from home
<u>Billion dollars</u>			
Food expenditures:			
1972	122.2	85.6	36.6
1978	216.0	150.5	65.5
1979	241.2	170.7	70.5
1980	260.8	179.5	81.3
1981	284.5	193.8	90.7
1982 <u>1/</u>	297.6	201.1	96.5
Marketing bill:			
1972	82.4	53.2	29.2
1978	147.1	94.2	52.9
1979	162.8	106.0	56.8
1980	179.7	113.5	66.2
1981	202.1	127.2	74.9
1982 <u>1/</u>	214.1	133.6	80.5
Farm value:			
1972	39.8	32.4	7.4
1978	68.9	56.3	12.6
1979	78.4	64.7	13.7
1980	81.1	66.0	15.1
1981	82.4	66.6	15.8
1982 <u>1/</u>	83.5	67.5	16.0
<u>Percent</u>			
Farm value as a percentage of food expenditures:			
1972	33	38	20
1978	32	37	19
1979	33	38	19
1980	31	37	19
1981	29	34	17
1982 <u>1/</u>	28	34	17

1/ Preliminary.

(table 27). The marketing bill was \$214 billion in 1982, up 5.9 percent over 1981's \$202 billion.

The marketing bill expands over time with increases in inflation and marketing input costs, but the percentage of domestic farm food expenditures accounted for by the marketing bill focuses on the role of farmers relative to processors and distributors in determining consumer food costs (fig. 13). This percentage of farm food expenditures was in the high sixties during most of the seventies, but it rose to 71 percent in 1981 and 72 percent in 1982, its highest level since 1947. This indicates that marketing costs are the largest and fastest growing component of the consumer's dollar spent for food.

The marketing bill can be broken down into its various cost components (fig. 14). Labor is the biggest component. Total labor charges for processing and distributing domestic farm foods were up 5 percent in 1982 to \$95.5 billion, 45 percent of the marketing bill (table 28).

The marketing bill statistics can also be separated into expenditures for food at home and away from home. At-home expenditures for farm foods were \$201 billion in 1982, and expenditures in the away-from-home market were \$97 billion. At-home expenditures going to farmers hit \$68 billion, or 34 percent of total expenditures, while the amount of away-from-home expenditures going to farmers reached \$16 billion, or 17 percent. Thus, farm sector developments have a bigger impact on grocery store prices than restaurant prices.

Food Prices

Prices of food in grocery stores rose only 3.4 percent in 1982, the smallest increase since 1976, because of large supplies of farm commodities and weak consumer demand. Record-high farm output and slow real income growth, which held down domestic demand for farm products, limited the increase in prices received by farmers for farm foods to only 2 percent.

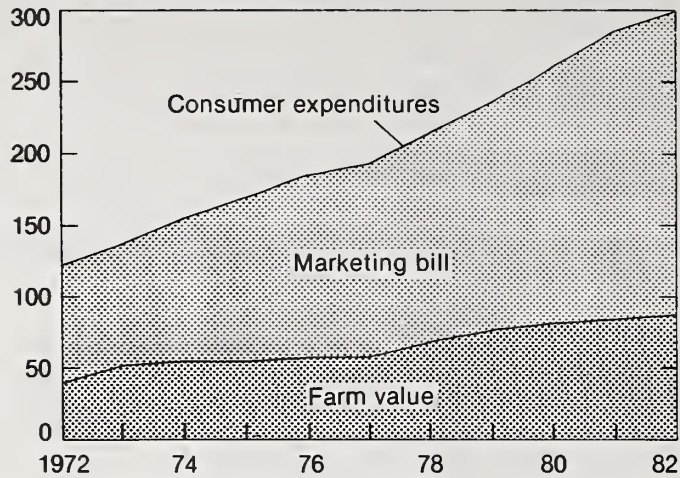
Food marketing costs for labor and intermediate goods and services used in food manufacturing and distribution increased 5 percent in 1982, down from a 11-percent rise in 1981, a decrease that paralleled the drop in the general rate of inflation from 10.4 percent in 1981 to about 6 percent in 1982.

The consumer price index (CPI) for food increased 4 percent in 1982, the third straight year of slowing retail food price rises. The CPI for foods eaten at home increased 3.4 percent, and the away-from-home component rose 5.3 percent. Since 1979, the away-from-home component has been rising faster than the at-home component because marketing costs (labor, energy, and other inputs) make up a larger share of costs in restaurants than in grocery stores, and these costs have been rising faster than foodstuff prices. For instance, the farm value of foods in the USDA market basket has risen 10 percent since 1979, while the farm-to-retail price spread has risen 26 percent.

Figure 13

Marketing Bill, Farm Value, and Expenditures for Farm Foods

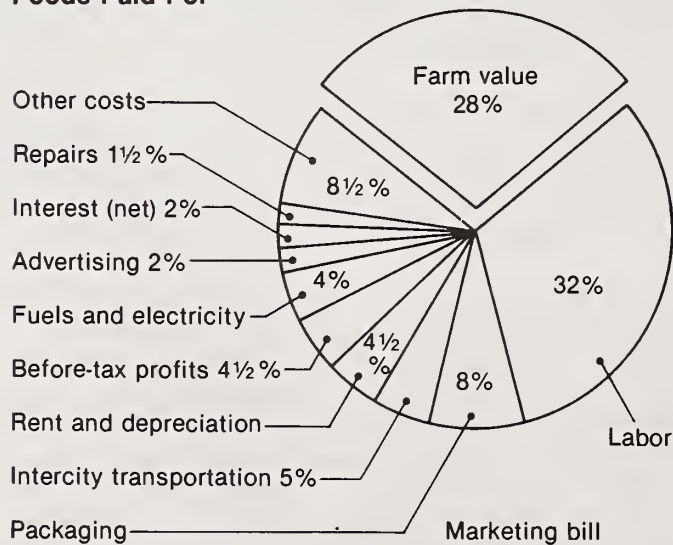
\$ billion



1982 preliminary. For domestic farm foods purchased by civilian consumers for consumption both at home and away from home.

Figure 14

What Consumer Expenditures for Farm Foods Paid For



Other costs include property taxes and insurance, accounting and professional services, promotion, bad debts, and many miscellaneous items.

1982 preliminary.

Farm-to-Retail Price Spread

The USDA market basket aggregates the prices of domestic farm foods bought in retail foodstores. Expenditure shares from 1972-74 are used to weight the prices in the market basket. Prices for this basket of foods are then broken down into their farm value and the farm-to-retail price spread components. These statistics identify the underlying causes of changes in retail food prices. The farm value is based on prices received by farmers for commodities equivalent to foods in the market basket. The spread between the retail price and farm value represents the charges for processing and marketing functions.

The 1982 farm value of foods in the market basket averaged 1 percent higher than in 1981 (fig. 15). Farm value rose early in 1982 but declined in the second half of the year due partly to seasonally large supplies, particularly for fresh vegetables and meats.

Farm prices were well below 1981 levels at the beginning of 1982, reflecting the bountiful harvests of 1981. However, prices began to strengthen in response to reduced pork supplies. By June, the farm value of the market basket had increased about 12 percent. During the late spring and summer of 1982, the farm value rose to the highest level of the year as meat supplies, particularly pork, tightened, reflecting earlier decisions by hog producers to reduce production because of low net returns. Supplies of fruits, both fresh and processed, also tightened, sending the farm value higher around midyear. After peaking in June, the farm value of the market basket declined

Table 28--Components of the food marketing bill, selected years

Item	1972	1978	1979	1980	1981	1982 ^{1/}
	<u>Billion dollars</u>					
Total marketing bill	82.4	147.1	162.8	179.7	202.1	214.1
Labor ^{2/}	36.6	66.0	73.8	80.7	90.7	95.5
Packaging	8.9	16.5	18.4	21.1	22.9	23.6
Transportation (rail and truck) ^{3/}	6.1	10.5	11.6	12.7	14.1	14.7
Fuel and power	2.5	6.3	7.6	9.0	10.9	11.7
Corporate profits before taxes	4.0	9.2	9.9	11.0	12.0	13.1
Other ^{4/}	24.3	38.6	41.5	45.2	51.5	55.5

^{1/} Preliminary. ^{2/} Includes supplements to wages and salaries, such as pensions and health insurance premiums. Also includes imputed earnings of proprietors, partners, and family workers not receiving stated remuneration. ^{3/} Does not include local hauling charges. ^{4/} Includes depreciation, rent, advertising, interest, and other costs.

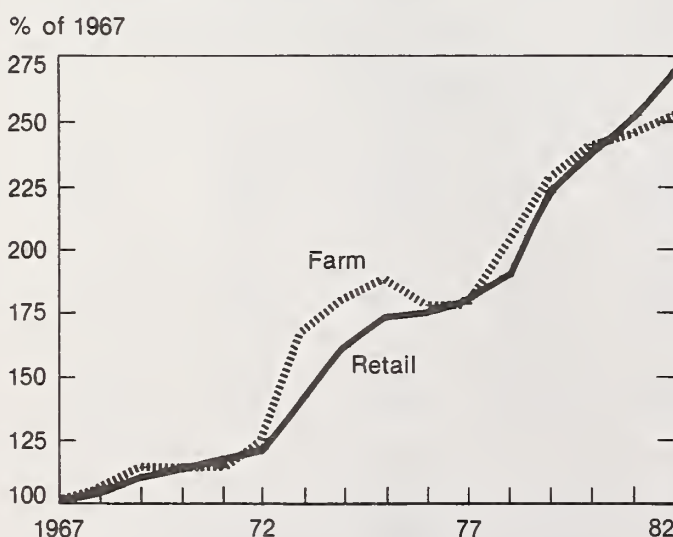
during the remainder of 1982, reflecting large crop harvests, adequate supplies of meat, and continued weak demand caused by the recession. In December 1982, the farm value of food was only slightly higher than a year earlier. Last year's 1-percent increase in the farm value was the smallest since 1977 and compared with a 1981 increase of 2.8 percent and a 1980 increase of 5.5 percent.

While changes in the farm value of market basket foods tend to vary widely from one year to the next, the farm value share of the retail price was relatively stable, averaging 37 to 38 percent between 1975 and 1980. However, in 1981, the farm value share dropped to 35 percent of the retail cost of farm foods, the lowest in two decades. It remained at 35 percent in 1982. The low shares in 1981 and 1982 reflected the abundance of food supplies, which held down farm prices, while retail prices rose faster because of rising processing and marketing charges.

The farm value as a share of the retail price varies greatly among foods, depending on the inputs used and the complexities of the marketing process. In general, animal products have the highest ratios of farm value to retail price; the more highly processed crop products have the lowest. Last year, the farm-value share of the retail price for major food groups ranged from 63 percent for eggs to 12 percent for cereal and bakery products (fig. 16).

Figure 15

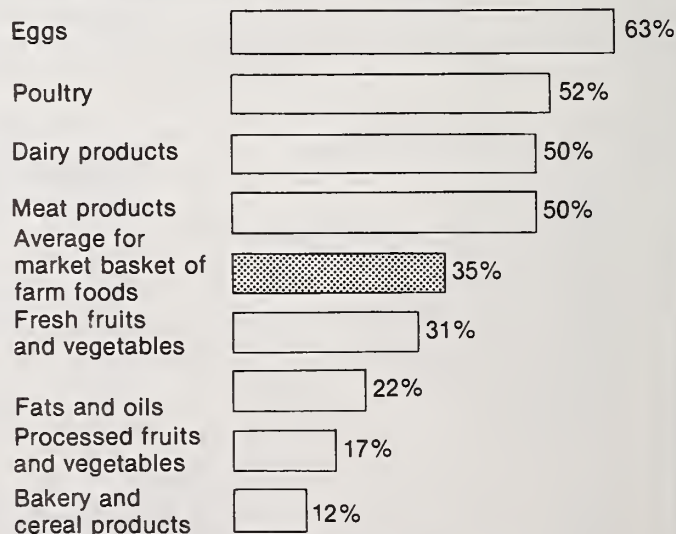
Food Prices: Retail and Farm Value



Retail prices, all food, Bureau of Labor Statistics. Farm value of domestically produced foods, U.S. Department of Agriculture.

Figure 16

Farm Share of Retail Food Prices



Farm value is the payment to farmers for quantities of food commodities, less the allowance for byproducts, equivalent to the retail unit. 1982.

The farm-to-retail spread represents payments for all the assembling, processing, transporting, and retailing charges that are added to the value of the farm product leaving the farm.

The farm-to-retail price spread for the market basket of foods averaged 5.1 percent higher in 1982, accounting for most of the rise in retail food prices. In late spring, when a sharp increase in farm value of foods exceeded the rise in retail prices, the price spread dropped a little but then widened again from late summer to the end of the year as farm value declined. In October, retail food prices dropped slightly because of the decline in farm values.

Table 29 summarizes the relationship between changes in retail prices in food stores and changes in the farm value of domestic farm foods, the farm-to-retail price spread for domestically produced foods, and prices of fish and imported foods. Note that changes in the 1982 farm value of food accounted for only 0.3 percentage point of the 3.4-percent rise in food prices, while the farm-to-retail price spread and fish and other imported foods contributed 2.7 and 0.4 percentage points, respectively.

Food Consumption Changes

Per capita food consumption of both animal and crop products fell in 1981 and 1982 (table 30). Total U.S. food consumption stood at about 1,393 pounds per capita in 1982, down 7 pounds from 1981, a drop caused by a 5-pound decline in total animal product use to 577 pounds in 1982 and a 2-pound decline in crop product consumption to 816 pounds. Declines in pork consumption were primarily responsible for the decline in animal product consumption, and declining fruit consumption outweighed increases in other crop products.

Total red meat consumption fell 8 pounds in 1982 to 149 pounds per person, due mostly to declining per capita pork use. This decrease followed a 3-pound decline in 1981.

Poultry production reached record levels in 1982, and per capita consumption was up a pound to 64 pounds as both chicken and turkey use rose. In 1982, egg consumption remained 34 pounds per person, an alltime low. Per capita consumption of all dairy products increased 2 pounds to 306 pounds in 1982.

Looking at crop products, consumption of fruits and melons fell 6 pounds to 159 pounds per capita. Retail fresh fruit prices rose 12 percent as poor weather reduced supplies of citrus and noncitrus fruits. However, vegetable consumption rose 3 pounds per capita in 1982. Consumption of vegetable oils increased 1 pound to a record-high 49 pounds per capita. Cereal and bakery products and sugar and sweeteners remained steady in 1982 at 151 and 135 pounds per capita, respectively.

AGRICULTURAL TRADE

U.S. agricultural exports in fiscal year 1982 (FY 82) fell 11 percent in value to \$39.1 billion, when large global crop supplies and weak demand kept world prices low (table 31). On a

Table 29--Contribution of food price components to price increases at foodstores, 1968-82

Year	Change in foodstore prices due to--			Added up to a retail price increase of--
	Farm value of food	Farm-to-retail price spread	Fish and imported foods	
	-----Percentage points-----			Percent
1968	1.7	1.5	0	3.2
1969	3.0	1.7	.1	4.8
1970	-.2	4.0	1.3	5.1
1971	.1	1.5	.8	2.4
1972	3.0	1.3	.2	4.5
1973	11.6	3.7	1.0	16.3
1974	3.2	9.2	2.5	14.9
1975	1.3	5.1	1.9	8.3
1976	-1.8	2.7	1.2	2.1
1977	.1	1.8	4.1	6.0
1978	4.5	4.6	1.4	10.5
1979	3.4	6.2	1.2	10.8
1980	1.7	4.2	2.1	8.0
1981	.8	5.5	1.0	7.3
1982	.3	2.7	.4	3.4

Sources: Derived from Bureau of Labor Statistics data and USDA market basket statistics.

calendar year basis, U.S. farm exports fell 15 percent to \$36.6 billion in 1982. FY 82 export volume declined only 2 percent to 158.1 million tons, but prices for most of the major commodities fell 10 to 20 percent. U.S. agricultural exports in FY 83 could fall to about \$36.5 billion.

Record-large U.S. crops and sluggish economic conditions have driven U.S. commodity prices down. However, the lower prices have not stimulated a proportionate increase in foreign demand because the appreciating dollar tends to keep foreign prices for U.S. goods higher than they would be otherwise.

Although interest rates are at similar levels in other countries, the lower rate of inflation in the United States causes the real interest rate (interest rates adjusted for inflation) to favor the U.S. dollar. A fall in the rate of return could lead to a somewhat weaker currency, but, in the case of the dollar, any fall in interest rates will probably be echoed elsewhere with the U.S. dollar retaining its advantage.

Table 31--U.S. trade balance, fiscal years 1980-82

Item	FY 1980	FY 1981	FY 1982
	<u>Million dollars</u>		
Exports:			
Agricultural	41,233	43,780	39,094
Nonagricultural	175,435	185,452	176,311
Total	216,668	229,232	215,405
Imports:			
Agricultural	17,366	17,218	15,346
Nonagricultural	226,641	238,318	233,488
Total	244,007	255,536	248,834
Trade balance:			
Agricultural	23,867	25,562	23,748
Nonagricultural	-51,206	-52,866	-57,177
Total	-27,339	-26,304	-33,429

World Economic Conditions

Despite the current economic woes, the U.S. economy is viewed elsewhere as being stable. The recent dampening of inflation has bolstered the dollar.

The foreign exchange position of many developing nations is worsening. The slow economic growth and austerity programs in the West have hindered exports from the developing countries, while the price of foreign exchange (mainly dollars) has risen significantly. In terms of their home currency, then, prices of imported goods may double or triple (as in Mexico) in very short periods of time.

Economic activity in the major industrialized nations--the United States, Canada, Japan, and the European Community (EC)--has reeled from the effects of anti-inflationary policies. These effects include high unemployment rates, high real interest rates, and low consumption and investment rates. Export growth has declined as a result of reduced consumption rates in the industrialized markets and also because sluggish demand for petroleum has weakened the purchasing power of markets in the Middle East.

Trade growth will probably be slow during the early stages of recovery because of weakened purchasing power in most export markets, particularly in the industrialized countries and in the petroleum-exporting nations. According to the International Monetary Fund, the industrialized countries marketed more than 65 percent of their 1981 exports to other industrialized countries, and almost 10 percent to petroleum-exporting countries. Slow economic growth and continued high unemployment

for the industrialized countries in 1983 will limit demand for many imported goods, thus restraining exports.

Imports are expected to fall short of needs in many developing countries, partly because of financial constraints. Many oil-exporting countries cannot increase their imports as fast as previously envisioned because of projected low oil prices. On the other side, oil-importing developing countries have not been able to capitalize fully on the low prices. Many of these countries borrowed heavily to finance economic growth in the seventies and are having difficulty repaying debts and finding new credit. Also, to finance imports, developing countries depend heavily upon foreign currency reserves derived from export revenue. Because of ample supplies and a sluggish world economy, prices will be low for many commodities these countries export, in turn limiting agricultural imports for at least the next several years.

Agricultural Commodities Exported

The present worldwide recession has taken a greater toll on U.S. trade than the previous recessions of 1974 and 1975, when global grain supplies were more evenly distributed worldwide, interest rates and inflation were more manageable, and the dollar was cheaper compared with the currencies of U.S. trading partners.

Crops

Corn exports, the hardest hit, plummeted from 59.4 million tons valued at \$9 billion in FY 81 to 49.6 million tons valued at \$6 billion in FY 82 (table 32). Demand for U.S. corn fell across a wide range of markets. Mexico, Japan, Poland, Italy, Romania, and Brazil together purchased 11 to 12 million tons less than in FY 81. Increased shipments to the USSR, Spain, Korea, and China offset part of the decline. The USSR purchased 7.6 million tons worth nearly \$1 billion.

Grain sorghum exports fared slightly worse, falling 18 percent to 6.3 million tons. Japan and Mexico accounted for 70 percent of U.S. grain sorghum exports in FY 81, and Venezuela, Israel, Korea, and Spain took an additional 17 percent. In 1982, these ratios changed to 47 and 36 percent with drastically reduced sales to Mexico and equally dramatic increases to Spain. Because these top six markets absorb over 80 percent of all U.S. sorghum exports, the crop is vulnerable to policy shifts. Exports of the record 1981 barley crop reached almost 2 million tons. The last time a barley crop of this magnitude was harvested in 1959, 2.5 million tons were exported. Drought in Spain spurred purchases of a wide range of feedstuffs, including 420,000 metric tons of U.S. barley. Other important barley markets included Taiwan, Japan, Singapore, and the EC.

Exports of wheat and products totaled \$7.7 billion in FY 82. Although the value was below the FY 81 peak of \$8.1 billion, export volume reached a record of over 46 million tons. China remained the largest U.S. wheat market, purchasing 8.2 million tons valued at \$1.2 billion. The USSR was the next largest market, buying 6.1 million tons worth \$1.1 billion. At present, the two countries are committed by agreements to import 9 million tons of wheat, annually.

Table 32--U.S. agricultural production, exports, and export shares, 1978-82

Commodity	Production--year ending Dec. 31					Exports--year ending Sept. 30					Export share of production							
	1978	1979	1980	1981	1982	1979	1980	1981	1982	1979	1980	1981	1982					
	-----1,000 metric tons-----														-----Percent-----			
Wheat 1/	48,322	58,080	64,618	76,169	32,984	37,625	44,015	46,180	68	65	68	61						
Rice, milled	4,271	4,324	4,838	6,060	2,396	2,955	3,172	2,911	56	68	66	48						
Corn	184,613	201,654	168,787	208,330	53,897	61,417	59,368	49,609	29	30	35	24						
Grain sorghum	18,575	20,546	14,712	22,333	5,222	8,199	7,702	6,290	28	40	52	28						
Sunflowerseed 1/	1,732	3,309	1,697	2,035	1,383	2,013	1,727	1,645	80	61	102	81						
Soybeans 1/	50,859	61,722	48,772	54,435	27,739	32,858	27,695	33,359	55	53	57	61						
Almonds 2/	78	165	144	186	55	108	92	95	71	65	64	51						
Peanuts 2/	1,354	1,359	790	1,352	392	374	157	216	29	28	20	16						
Walnuts 2/	52	68	64	74	12	17	20	22	23	25	31	30						
Cattle hides 3/	40,422	34,419	34,551	35,722	24,609	20,181	19,345	22,184	61	59	56	62						
Tallow, inedible	2,663	2,702	2,950	3,000	1,183	1,409	1,354	1,345	44	52	46	45						
Cotton, raw	2,364	3,185	2,422	3,406	1,341	1,986	1,210	1,487	57	62	50	44						
Tobacco 4/	808	609	713	824	287	283	252	254	36	46	35	31						
Hops 1/	25	25	34	36	14	18	17	18	56	72	50	50						
Apples, fresh	3,422	3,682	3,996	3,495	155	237	311	269	5	6	8	8						
Beans, dried	859	929	1,197	1,460	228	353	661	731	27	38	55	50						
Poultry 5/	5,880	6,519	6,619	6,992	208	320	395	315	4	5	6	5						
Pork 5/	6,075	7,008	7,537	7,199	101	85	101	82	2	1	1	1						
Beef and veal 5/	11,282	9,926	9,999	10,353	57	59	69	82	1	1	1	1						

-- = negligible. N/A = not available. 1/ Exports include products. 2/ Shelled basis. 3/ Cattle hides in thousand pieces. 4/ Export weight. 5/ Production in carcass weights.

Nearly half of the record 6.1-million-ton U.S. rice crop was exported in FY 82, down from 66 percent in the previous year. The primary U.S. rice markets in FY 82 were Nigeria, Korea, Saudi Arabia, Italy, and Iraq. Record world production in FY 82 severely limited U.S. exports of rice.

Soybeans and products (meal and oil) were the major U.S. export earners in FY 82, at \$8.4 billion. High grain prices in the EC in relation to nongrain feeds resulted in greater EC purchases of U.S. soybeans. The internal price for corn in the EC (no corn can enter the EC below this price) was \$5 to \$10 per metric ton higher than the price of meal at Rotterdam throughout the last half of 1982. Spain increased its purchases of U.S. soybeans by almost 70 percent to 3.1 million metric tons, making it the second largest U.S. customer. Japan remained the largest market at 4.3 million tons worth \$1.1 billion. Soybean meal exports also increased (to 6.3 million tons) but at a more modest rate of 5 percent, compared with 27 percent for soybeans. The EC was the dominant market, followed by Eastern Europe and Venezuela.

Pakistan has become the largest importer of U.S. soybean oil, gradually approaching the purchases by India and Iran in past years. Out of total U.S. soybean oil exports of 942,000 tons in fiscal year 1982, Pakistan accounted for 260,000 tons, or 28 percent. Developing countries dominate this market, because they do not produce adequate amounts of oil for domestic consumption through the crushing process.

Corn gluten feed exports, nearly all of which go to the Netherlands, West Germany, and the United Kingdom, grew at the rate of 16 percent annually from 1977 to 1982. Although this growth slowed during FY 82 to 4 percent, reaching 2.8 million tons, it is still a significant element in EC feed rations. This byproduct currently enters the EC duty free.

U.S. exports of cotton were 23 percent above FY 81's reduced level of 1.2 million tons. Sluggish economic conditions, which appear to affect textile production to a greater extent than food production, and a bumper 1981 harvest heavily influenced prices throughout the year. Prices fell over \$400 a metric ton--roughly 20 cents a pound--during the course of the year. Approximately one-fourth of all cotton exports--361,000 metric tons, or 1.5 million running bales--went to Japan. Taiwan, Korea, Indonesia, Hong Kong, and Western Europe also bought more U.S. cotton, easily offsetting declines to China and Canada.

Tobacco exports came to 254,000 tons in FY 82, slightly above FY 81's, but 8 to 10 percent below the levels attained during 1977-80. Nonetheless, with high quality American tobacco selling at twice the world price, exports reached a record \$1.5 billion in FY 82.

Animal Products

Exports of animal products, especially poultry meat, slowed considerably in the last few months and closed out the year at FY 81's total of \$4.1 billion; the decline was particularly

affected by the near-total loss of sales to Egypt, the second largest U.S. poultry market. Butter, beef, and cattle hides were exceptions to an otherwise sluggish export picture. Butter shipments to New Zealand, Poland, and Belgium totaled 85,000 metric tons.

Japan took virtually the same amount of U.S. red meat as in FY 81, but shifted 10,000 to 12,000 tons from pork to beef. Exports of edible offals, or variety meats, posted a record 226,000 tons, or double those of a decade earlier. Since 1970, meat exports (beef, pork, and offals) have grown at an annual rate of 8 percent in volume and 17 percent in value and now approach \$1 billion, despite widespread import restrictions on meats in world trade.

Net Agricultural Trade

The agricultural trade surplus of \$23.7 billion in FY 82 dropped 11 percent from FY 81 (table 31). The \$4.7-billion decline in agricultural exports was partially offset by a \$1.9-billion decline in agricultural imports. Noncompetitive imports, which account for about one-third of all farm imports, fell 11 percent from FY 81. Competitive imports of \$10 billion also were about 11 percent less than FY 81, mainly due to declines in beef and sugar. Animals and animal products, sugar, fruits, and vegetables accounted for 67 percent of competitive agricultural imports in FY 82.

Beef imports dropped 14 percent to \$1.4 billion, while volume fell only slightly. Australia provided 47 percent of beef import volume, and New Zealand supplied most of the remainder. Canned pork, mainly from Poland, declined, but fresh pork (mostly from Canada) increased, partly due to favorable exchange rates. Imports of live animals (mainly cattle) rose 15 percent, again partly due to favorable U.S./Canadian exchange rates.

Sugar imports dropped 46 percent to nearly \$1.2 billion, while volume fell 7 percent. Unit import prices fell sharply because of increased world supplies. On May 5, 1982, an emergency import quota program apportioned quotas among exporting countries according to average performance during 1975-81, excluding the years when performance was highest and lowest. The highest quotas were set for the Dominican Republic, Brazil, and the Philippines.

Severe weather in Florida and California growing areas resulted in large import gains for fruits and vegetables during FY 82. Concentrated orange juice volume from Brazil jumped by two-thirds. Canned tomatoes from Italy, Spain, Taiwan, and Israel also gained substantially.

Export Markets

Japan maintained its position as the leading importer of U.S. farm products in FY 82, and the Soviet Union moved up to second place, edging out the Netherlands (tables 33 and 34). The list of countries taking more than \$1 billion in U.S. farm products remained at 11 in 1982. Among the top 25 markets, Nigeria and Saudi Arabia moved up to 19th and 20th, respectively, from their 20th and 21st rankings in 1981.

Table 33--U.S. agricultural exports to 20 leading markets

Destination 1/ (countries ranked in order of total exports)	FY 1981	FY 1982	Change
	<u>Mil. dol.</u>	<u>Mil. dol.</u>	<u>Percent</u>
Japan	6,737	5,737	-15
Netherlands 2/	3,260	3,302	+1
USSR	1,674	2,321	+39
Canada	2,091	1,872	-10
Spain	1,388	1,842	+33
China	2,184	1,819	-17
Korea, Rep.	2,136	1,607	-25
Germany, Fed. Rep.	1,751	1,578	-10
Mexico	2,732	1,493	-45
Taiwan	1,105	1,166	+6
Italy	1,228	1,039	-15
United Kingdom	938	946	+1
Belgium-Luxembourg 2/	787	935	+19
Egypt	981	901	-8
Venezuela	900	747	-17
France	605	663	+10
Portugal	772	583	-24
Brazil	843	581	-31
Nigeria	503	541	+8
Saudi Arabia	501	472	-6

1/ Adjusted for transshipments through Canada.

2/ Not adjusted for transshipments through the Netherlands and Belgium.

Leading export markets for U.S. farm products continued to change in 1982, responding to a wide range of economic forces. Import demand in some countries tapered off from the rapid pace during 1978-80 when many crops failed. Shortages of foreign exchange and unfavorable currency exchange rates depressed imports in other areas, blunting U.S. agricultural exports for the first time in 13 years, at \$39.1 billion in FY 82. Volume declined to 158 million tons.

Developed countries took just over half of U.S. agricultural exports in 1982, a larger share than in 1981. Japan remained the largest importer of U.S. food and agricultural products by a wide margin despite declines in most major commodities, except cotton and tobacco.

After adjustment for transshipments, farm-product exports to Western Europe totaled \$12.2 billion, slightly above the 1981 figure. Larger shipments to Spain and Belgium accounted for

Table 34--U.S. agricultural exports by major markets, fiscal year 1982

Commodity group	Total U.S. exports	10 leading markets 1/									
		1	2	3	4	5	6	7	8	9	10
		Million dollars									
Total agricultural	39,094	Japan 5,737	USSR 2,355	Neth 2,300	FRG 2,040	Canada 1,872	Spain 1,842	China 1,819	Korea 1,607	Mexico 1,493	Taiwan 1,166
Feed grains and products	7,044	Japan 1,583	USSR 950	Spain 750	Korea 377	Taiwan 313	Portugal 286	Belgium 249	Neth 180	GDR 179	Mexico 168
Wheat and products	7,675	China 1,250	USSR 1,107	Japan 564	Brazil 477	Egypt 428	Korea 310	India 233	Nigeria 231	Peru 176	Italy 170
Soybeans	6,479	Japan 1,040	Neth 955	FRG 870	Spain 840	Belgium 360	Taiwan 284	France 212	Italy 212	UK 207	USSR 180
Cotton, excl. linters	2,141	Japan 534	Korea 442	China 292	Taiwan 214	Indonesia 105	Hg Kg 77	Canada 51	Thailand 51	Greece 51	FRG 43
Soybean meal	1,453	Neth 260	FRG 240	Italy 214	Venez 129	Canada 77	GDR 37	Bulgaria 31	UK 25	Spain 20	Yugo 20
Vegetables and preparations	1,442	Canada 335	Mexico 322	Japan 175	UK 75	FRG 37	Venez 33	Saudia 32	Hg Kg 30	Colombia 25	Brazil 22
Rice	1,149	Nigeria 181	Saudia 151	Iraq 95	Korea 83	Italy 60	RSA 57	Belgium 53	Iran 51	Canada 47	Switz 35
Fruits and preparations	1,394	Canada 435	Japan 268	Hg Kg 106	Neth 49	France 41	FRG 39	Venez 35	Saudia 33	Taiwan 33	UK 33
Tobacco, unmanufactured	1,486	Japan 289	FRG 184	Spain 103	UK 82	Italy 73	Thailand 67	Switz 66	Taiwan 63	Neth 61	Egypt 41
Feeds and fodders	1,038	Neth 557	Japan 127	FRG 79	Canada 57	UK 47	Mexico 26	Trinidad 24	Taiwan 22	Hg Kg 15	Bahamas 7
Meats and products	984	Japan 443	France 103	Canada 72	UK 40	Neth 36	Mexico 36	Belgium 31	Saudia 27	Venez 25	Bahamas 16
Vegetable oils and waxes	989	Pakistan 127	Egypt 95	Venez 93	Mexico 67	Japan 58	India 40	Colombia 39	Neth 32	Dem Rep 29	USSR 29
Poultry and products	579	Japan 109	Canada 51	Mexico 43	Singapore 37	Hg Kg 37	FRG 25	Venez 23	Egypt 23	Nigeria 19	Korea 15
Inedible tallow	597	Egypt 84	Neth 73	Pakistan 45	Japan 35	Mexico 28	Korea 26	FRG 25	UK 24	Colombia 18	USSR 15
Whole cattle hides	668	Japan 208	Korea 132	Mexico 61	Taiwan 51	Italy 39	Canada 28	Poland 21	FRG 19	Romania 18	France 14
Nuts and preparations	575	FRG 106	Canada 70	UK 62	Japan 57	Neth 53	France 34	Spain 27	Australia 15	Saudia 15	Switz 11
Other	3,401										

1/ FRG = Federal Republic of Germany, Neth = Netherlands, Portugal = Portugal, Indo = Indonesia, Hg Kg = Hong Kong, Venez = Venezuela, GDR = German Federal Republic, Saudia = Saudi Arabia, Bel-Lux = Belgium-Luxembourg, RSA = Republic of South Africa, Switz = Switzerland = Switzerland, Trin-Tob = Trinidad-Tobago, Pak = Pakistan, Colomb = Colombia, DR = Dominican Republic, Sing = Singapore, Czech = Czechoslovakia.

most of the gain to this region. Farm product exports to West Germany, the fourth largest market in 1981, dropped 10 percent to \$1.6 billion (table 33).

Developing countries bought \$13.9 billion of U.S. farm products in FY 82, a decline in market share from FY 81's 39 percent to 36 percent. The decline in developing countries showed Latin America down 28 percent, Africa down 14 percent, and Asia (excluding Japan and China) down 9 percent. The commodities most affected by these declines were poultry meats, rice, and feed grains. Oilseed products and cotton were the only bright spots in a sluggish export picture. Korea, Mexico, and Taiwan were the principal developing country markets, taking \$4.3 billion of U.S. farm products.

Centrally planned countries accounted for 13 percent of U.S. exports, down from 14 percent in 1981. The Soviet Union became the second largest U.S. market, at \$2.4 billion, through purchases of 13.9 million tons of wheat and corn. This, however, did not overcome declining sales to China (down 17 percent) and Eastern Europe (down 55 percent). Cotton sales to China fell 27 percent, and grain and oilseed markets in Eastern Europe were under severe financial constraints.

The Importance of Agricultural Exports to the U.S. Farm Economy

The rapid growth in world agricultural trade during the sixties and seventies and the U.S. response to meet this demand through increased production and exports have linked the well-being of the U.S. farm sector to foreign trade, which, in turn, depends on foreign production as well as macroeconomic conditions. U.S. agricultural exports command a greater share of world trade than the U.S. share of world production. For example, the United States produces a third of the world's coarse grains, a sixth of the wheat, and only 2 percent of the rice. But, in recent years, the United States has captured over three-fifths of world trade in coarse grains, half of wheat trade, and one-fourth of rice trade. Today, nearly two-thirds of U.S. wheat is destined for foreign markets, compared with about half of rice and about a fourth of coarse grains (table 32).

Exports provided about 22 percent or more of cash receipts in FY 82 for U.S. farmers. Production equivalent to 2 of every 5 acres harvested was exported. About 60 percent of 1981 soybean production, 44 percent of cotton production, 31 percent of tobacco production, and 80 percent of sunflower production were exported (table 32).

Based on 1981 farm production and sales, 10 States--Illinois, Iowa, California, Texas, Minnesota, Nebraska, Kansas, Indiana, Missouri, and North Dakota--accounted for 55 percent of the total agricultural export sales value (table 35). Estimated exports from Illinois and Iowa exceeded \$3 billion each.

Illinois ranked first in soybean and feed grain exports, followed closely by Iowa. California placed first in exports of fruits, vegetables, and nuts, and second in cotton and rice.

Table 35--U.S. agricultural export shares by leading States: estimated value by commodity groups, fiscal year 1982

Commodity group	Total for leading States	10 leading States									
		1	2	3	4	5	6	7	8	9	10
		Million dollars									
Total	39,094.5	Ill.	Iowa	Calif.	Tex.	Minn.	Neb.	Kans.	Ind.	Mo.	N. Dak.
Soybeans and products	8,429.9	1,481.5	1,374.0	655.6	639.8	586.7	420.4	417.3	331.5	318.6	270.4
Feed grains and products ^{1/}	7,684.6	1,371.4	1,294.2	828.2	595.2	582.2	402.5	313.7	292.8	248.4	245.0
Wheat and products	7,675.1	Kans.	N. Dak.	Tex.	Okla.	Wash.	Mont.	Mo.	Minn.	Neb.	Calif.
		904.8	658.7	544.1	512.6	494.3	445.0	342.6	323.1	309.7	297.1
Cotton and linters	2,162.5	Tex.	Calif.	Ariz.	Miss.	La.	Ark.	Okla.	Ala.	Tenn.	Mo.
		782.7	488.6	222.5	216.3	102.6	83.5	60.8	58.3	43.6	23.2
Tobacco, unmfed.	1,486.5	N. Car.	Ky.	S. Car.	Va.	Ga.	Tenn.	Fla.	Md.	Ohio	Ind.
		714.2	239.0	137.3	132.4	111.5	82.6	21.1	14.7	9.3	8.5
Vegetables and preparations	1,442.1	Calif.	Wash.	Idaho	Mich.	N. Oak.	Neb.	Colo.	Fla.	Ore.	Minn.
		297.4	195.5	156.0	150.6	98.5	80.1	76.8	59.6	52.5	49.2
Fruits and preparations	1,394.1	Calif.	Fla.	Wash.	Tex.	Ariz.	Mich.	Haw.	Oreg.	N.Y.	Mass.
		684.6	274.9	118.4	53.5	43.8	28.6	27.7	24.2	20.4	12.4
Live animals and meat, excl. poultry	1,230.3	Iowa	Tex.	Neb.	Kan.	Ill.	Mo.	Calif.	Minn.	Ky.	S. Oak.
		125.5	124.1	72.5	59.7	56.6	53.2	52.4	48.6	47.4	44.8
Rice	1,148.5	Ark.	Calif.	Tex.	La.	Miss.	Mo.	--	--	--	--
		437.5	257.2	171.2	170.2	93.0	19.4				
Hides and skins	1,021.2	Tex.	Iowa	Neb.	Kans.	Wisc.	Okla.	S. Oak.	Minn.	Calif.	Mo.
		105.9	58.9	56.5	50.4	40.8	38.4	36.0	33.8	32.9	32.4
Fats, oils, and greases, animal	704.1	Tex.	Iowa	Neb.	Kans.	Okla.	Mo.	S. Oak.	Calif.	Minn.	Colo.
		92.5	61.6	53.2	46.3	34.5	31.6	31.0	27.9	25.7	25.5
Poultry and products	579.0	Ark.	Ga.	N. Car.	Ala.	Calif.	Tex.	Miss.	Ind.	Md.	Pa.
		64.6	62.7	48.9	47.7	37.9	27.6	27.2	25.2	23.6	20.8
Sunflower- seeds and oil	509.8	N. Oak.	Minn.	S. Oak.	Tex.	--	--	--	--	--	--
		356.5	91.4	58.3	3.6						
Tree nuts	395.2	Calif.	Haw.	Mo.	Ore.	Ga.	Tex.	Okla.	W. Va.	Ohio	Ala.
		359.6	8.2	4.7	4.1	4.0	1.7	1.4	1.2	1.1	1.0
Dairy products	367.8	Wis.	Calif.	Minn.	N.Y.	Pa.	Mich.	Iowa	Ohio.	Mo.	Wash.
		92.5	59.6	55.0	23.8	22.0	16.1	15.0	13.7	9.3	8.7
Peanuts and products	246.5	Ga.	Ala.	N. Car.	Tex.	Va.	Okla.	Fla.	S. Car.	N. Mex.	Miss.
		102.3	37.3	34.7	24.3	20.5	11.7	11.0	2.4	1.5	.8
Cottonseed and products	238.9	Tex.	Calif.	Ariz.	Miss.	La.	Ark.	Okla.	Ala.	Tenn.	Mo.
		91.0	54.0	23.6	22.5	10.7	8.8	6.8	5.5	4.8	2.5

-- = not applicable.

^{1/} Includes additional products such as corn gluten feed and meal.

Export shares, by State, are estimated from various data bases, primarily from the volume of production by State. Export values were obtained by multiplying the units of production or sales for each commodity from each State by the national average export unit value for each of the respective commodities. In cases where annual production series were not available, the 1978 Census of Agriculture data were used.

Since few States collected or published information on exports, State shares were estimated from data sources such as USDA's Crop Reports or the Census of Agriculture. A major premise is that each State's share of exports equals its contribution to U.S. farm output. While this premise may not always be valid, producers in each State do obtain additional income indirectly from exports through their price-enhancing effect.

INCOME AND EMPLOYMENT IN THE FOOD AND FIBER SECTOR

Production, income, and employment data from all sectors in the U.S. economy are combined in the national input-output table. The farm sector portion of the national input-output table is prepared by USDA analysts using data from the USDA farm sector accounts. The national input-output table may be used to analyze the interdependence of production, income, and employment generated by intersector transactions within the domestic economy and by foreign transactions. In this report, the economic impact of farm sector production on nonfarm income and employment is analyzed using the national input-output table.

In an advanced economy like the U.S. economy, providing the food, clothing, and tobacco needs of American consumers and those foreign consumers of U.S. products is not only the role of the farm sector but also involves the food processing sector, the manufacturing sector, the transportation, trade, and retailing sectors, eating establishments, and other sectors. The total contribution of each of these sectors can be viewed as a measure of the size of the food and fiber sector.

The food and fiber system accounted for nearly 22 percent of employment in the domestic U.S. economy and 20 percent of total GNP in 1981 (table 36). Approximately 23.6 million workers were employed in the food and fiber sector. The farm sector employed 3 million people, or 2.8 percent of total U.S. employment. Nonfarm food and fiber sector employment increased from 20.2 million in 1980 to 20.6 million in 1981. In recent years, agricultural exports have accounted for about 700,000 nonfarm jobs.

The Nation's labor force is part of the economy's resource endowment, and the key to a high standard of living is the amount of output obtainable from the resources used. Since the food and clothing products of the food and fiber system meet basic needs of the Nation's population, a productive labor force in the food and fiber sector frees labor resources for meeting society's other goals, perhaps not as basic, but certainly contributing to economic well-being. If only slightly more than one in five workers is needed to meet the Nation's basic food

Table 36--The food and fiber sector and the domestic economy, 1972-81

Item	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
<u>Millions</u>										
Employment:										
Farm sector	3.3	3.2	3.3	3.1	3.0	3.0	2.9	3.1	3.0	3.0
Nonfarm sectors	17.4	17.5	18.0	18.1	17.9	18.6	19.2	20.2	20.2	20.6
Food processing	1.8	1.7	1.7	1.7	1.6	1.7	1.7	1.8	1.7	1.7
Manufacturing	4.2	4.3	4.4	4.5	4.4	4.5	4.7	4.9	5.0	5.1
Transportation, trade, and retailing	6.5	6.5	6.7	6.7	6.8	7.0	7.3	7.7	7.8	8.0
Eating establishments	2.8	2.9	3.0	3.0	3.0	3.1	3.2	3.3	3.3	3.3
All other sectors	2.1	2.1	2.2	2.2	2.1	2.3	2.3	2.5	2.4	2.5
Total food and fiber sector	20.7	20.7	21.3	21.2	20.9	21.6	22.1	23.3	23.2	23.6
Total domestic economy ^{1/}	87.0	89.4	91.9	93.8	96.2	99.0	102.3	105.0	106.9	108.7
<u>Percent of total</u>										
Farm sector	3.8	3.6	3.6	3.3	3.1	3.0	2.8	3.0	2.8	2.7
Nonfarm sectors	20.0	19.6	19.6	19.3	18.6	18.8	18.8	19.2	18.9	19.0
Total food and fiber sector	23.8	23.2	23.2	22.6	21.7	21.8	21.6	22.2	21.7	21.7
Total domestic economy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Billion dollars</u>										
Value added by activity: ^{2/}										
Farm sector	30.3	43.1	43.0	47.8	41.1	45.0	52.9	71.6	65.4	71.7
Nonfarm sectors	210.1	219.9	240.6	275.3	298.8	335.9	368.3	418.0	457.2	515.5
Food processing	32.4	31.2	34.4	39.8	42.5	48.7	51.4	58.6	62.1	69.0
Manufacturing	42.7	44.2	48.4	56.4	61.1	68.3	76.1	84.6	91.5	103.7
Transportation, trade, and retailing	75.0	79.7	87.4	98.0	106.4	118.5	130.7	148.7	164.8	185.5
Eating establishments	17.0	18.5	20.1	23.1	25.1	27.5	30.3	33.2	35.7	39.1
All other sectors	43.0	46.3	50.3	58.0	63.7	72.5	79.8	92.9	103.1	118.6
Total food and fiber sector	240.4	263.0	283.6	323.1	339.9	380.9	421.2	489.6	522.6	587.6
Total domestic economy	1,185.9	1,326.4	1,434.2	1,549.2	1,718.0	1,918.3	2,163.9	2,417.8	2,633.1	2,937.7
<u>Percent of total</u>										
Farm sector	2.6	3.2	3.0	3.1	2.4	2.3	2.5	2.9	2.5	2.4
Nonfarm sectors	17.7	16.6	16.8	17.8	17.4	17.5	17.0	17.3	17.3	17.6
Total food and fiber sector	20.3	19.8	19.8	20.9	19.8	19.8	19.5	20.2	19.8	20.0
Total domestic economy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^{1/} Represents the available work force.^{2/} Value added equals profits, rent, interest, wages, indirect business taxes, and depreciation.

and clothing needs, then this frees about four of five civilian workers to work in activities which contribute to other societal activities and goals, such as nonfarm business, health, education, recreation, shelter, and safety. Under these circumstances, a smaller percentage of total civilian employment indicates a high level of economic performance of the total economy.

But in order for members of the economy to benefit from society's production, they must have a source of income with which to purchase these goods and services. The largest single source of household income is labor income. To get labor income, households must have access to jobs. Here, the food and fiber system contributes by providing over one-fifth of the civilian jobs in the U.S. economy. In a slack economy and perhaps in the short term, society may value the latter perspective (jobs). But in a growing economy and in the long term, society may value the first perspective (productivity of resources).

Comparing IRS Farm Data Trends With USDA Measures of Farm Income

Richard W. Simunek and Lise Poirier*

The Internal Revenue Service (IRS) tax collection system influences farm data collected by the U.S. Department of Agriculture and the Census of Agriculture. Census enumeration lists rely heavily on farm taxpayers' addresses from the IRS. USDA and Census surveys, which collect farm receipts and expenditure data, sometimes coincide with the preparation of the IRS Schedule F (Farm Income and Expenses) to shorten the length of enumeration time required. Survey questions are often structured to obtain data similar to that required by the Schedule F. Establishing and understanding the relationship between USDA and IRS data may validate the economic accounting concepts and data systems underlying the USDA farm income accounts. This paper examines the conceptual and statistical implications of IRS farm data trends on the USDA measure of farm income.

Data needed to estimate and distribute USDA net farm income continue to expand, but existing farm data collection efforts to meet these needs are restricted by rising survey costs, increasing respondent burden, legislative restrictions, and public resistance to surveys. IRS farm data could become more important for farm income analysis if the Survey of Farm Finance conducted by the Bureau of the Census was discontinued

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or reduced in size. The 1983 Farm Finance Survey is currently prohibited by an amendment to the Commerce appropriation bill.

Section 6108 of the Internal Revenue Code requires the IRS to prepare and publish business statistics on the operation of the internal revenue laws. IRS business statistics are estimates derived from stratified samples of income tax returns selected before audit and include information on receipts, deductions, net income, income tax liability, tax credits, and distributions to stockholders. Business classifications include the Standard Industrial Classification (SIC) Code by industry, size of receipts, and State data. Schedule F (Farm Income and Expenses) and Form 4835 (Farm Rental Income and Expenses) provide aggregate farm business receipt and expense information for sole proprietorships. Businesses organized as partnerships and corporations are classified as farms by IRS if farming is the largest single source of income.

COMPARING AGGREGATE DATA TRENDS

IRS and USDA aggregate data were similar in both magnitude and trend for 1972 and previous years, but diverged in 1973 and following years (tables 1 and 2). IRS data reveal two basic adjustments to record-high farm income in 1973.

Depreciation reported to the IRS jumped dramatically, increasing nearly \$4.6 billion for the 5-year period from 1972 to 1976. Previously, IRS depreciation had increased only about \$2.6 billion for the 10-year period from 1963 to 1972. IRS depreciation included additional first-year depreciation but did not include the investment tax credit. The Asset Depreciation Range System, introduced in 1971 and shortening write-off periods for most farm assets, may explain a large portion of the 1972 depreciation increase. Farmers may alter their timing of expenditures as well as sales to reduce income taxes under the cash accounting method.

Farmers also dramatically altered their current expenditures in 1973 to reduce income taxes boosted by record high farm income. IRS total expenses increased more than \$22.1 billion from 1972 to 1974, while USDA total expenses increased \$17.3 billion, a fairly similar amount given definitional differences (table 1). But note the remarkable difference in timing. Of the total \$22.1-billion increase in IRS total expenses from 1972 to 1974, nearly \$20 billion, or 90 percent, occurred in 1973. USDA total production expenses increased \$12.5 billion in 1973, or 72 percent of the \$17.3-billion increase in total production expenses from 1972 to 1974. To reduce 1973 income taxes, farmers apparently purchased and/or prepaid for inputs in 1973 to be used for the following 1974 production period. USDA picked up these 1973 prepaid expenditures in its data in 1974.

Record-high farm income (as measured in the USDA farm income series) may have shifted the IRS classification of some corporations to the farm category in 1973 and following years. IRS business receipts jumped from \$66.2 billion in 1972 to \$92 billion in 1973, an increase of 39 percent.

Table 1--IRS and USDA number of farms, farm business receipts, total deductions, and depreciation, 1960-78

Year	Number of farms				Farm business receipts 1/				Total deductions 2/				Depreciation			
	IRS	USDA	as percentage of IRS	USDA	IRS	USDA	as percentage of IRS	USDA	IRS	USDA	as percentage of IRS	USDA	Capital : : finance : : account 3/	IRS : : percentage : : of finance : : of account	Percent	Percent
	Thousand	Thousand	Percent	Thousand	Million dollars	Million dollars	Percent	Million dollars	Million dollars	Million dollars	Percent	Million dollars	Million dollars	Percent	Percent	Percent
1960 4/	N/A	3,963	N/A	N/A	35,194	N/A	N/A	22,826	N/A	N/A	N/A	3,119	N/A	N/A	N/A	N/A
1961 4/	N/A	3,825	N/A	N/A	36,900	N/A	N/A	23,931	N/A	N/A	N/A	3,141	N/A	N/A	N/A	N/A
1962 4/	N/A	3,692	N/A	N/A	38,472	N/A	N/A	25,431	N/A	N/A	N/A	3,235	N/A	N/A	N/A	N/A
1963 4/	3,344	3,572	94	37,432	39,458	37,432	95	26,526	N/A	N/A	N/A	3,662	3,334	110	110	110
1964 4/	3,265	3,457	94	35,799	39,843	35,799	90	26,437	N/A	N/A	N/A	3,777	3,448	110	110	110
1965 4/	3,198	3,356	95	38,882	42,215	38,882	92	31,111	28,112	31,111	111	3,996	3,582	112	112	112
1966 4/	3,154	3,257	97	43,156	47,128	43,156	92	34,355	30,666	34,355	112	4,310	3,758	115	115	115
1967 4/	3,166	3,162	100	43,545	46,380	43,545	94	35,452	31,892	35,452	111	4,570	4,020	114	114	114
1968	3,172	3,071	103	45,269	48,166	45,269	94	37,135	32,844	37,135	113	4,772	4,286	111	111	111
1969	3,219	3,000	107	50,896	52,532	50,896	97	42,393	34,991	42,393	121	5,204	4,510	115	115	115
1970	3,041	2,949	103	54,297	54,784	54,297	99	46,718	37,166	46,718	126	5,463	4,783	114	114	114
1971	3,076	2,902	106	55,821	56,534	55,821	99	48,313	39,285	48,313	123	5,702	5,243	109	109	109
1972	3,137	2,860	110	66,234	65,732	66,234	101	55,619	43,790	55,619	127	6,250	5,484	114	114	114
1973	3,351	2,823	119	92,034	90,320	92,034	102	75,578	56,264	75,578	134	7,741	6,076	127	127	127
1974	3,325	2,795	119	92,978	93,768	92,978	99	77,754	61,083	77,754	127	8,735	N/A	N/A	N/A	N/A
1975 5/	3,272	2,521	130	98,020	90,715	98,020	108	83,951	62,738	83,951	134	9,625	N/A	N/A	N/A	N/A
1976	3,367	2,497	135	108,621	97,122	108,621	112	93,537	68,956	93,537	136	10,833	N/A	N/A	N/A	N/A
1977	3,084	2,456	126	107,383	99,184	107,383	108	95,989	73,718	95,989	130	10,958	N/A	N/A	N/A	N/A
1978	3,269	2,436	134	128,593	116,750	128,593	110	111,292	82,328	111,292	135	12,776	N/A	N/A	N/A	N/A

N/A = not available.

1/ USDA business receipts equal cash receipts, Government payments, and other farm income. IRS business receipts equal cash receipts, Government payments, other farm income, and patronage dividends. Sales of livestock held for draft, breeding, sport, or dairy purposes treated as capital gains or losses excluded from IRS business cash receipts are included in USDA farm business receipts as current income.

2/ Depreciation is excluded from both USDA and IRS data because USDA depreciation is based on replacement value, and IRS depreciation is based on book value. USDA total deductions equal total farm production expenses less depreciation.

3/ From: Simunek, Richard W. "National Farm Capital Accounts," American Journal of Agricultural Economics, Vol. 56, 1976, pp. 532-542.

4/ IRS farm tax data are not available from 1960 to 1962. IRS farm corporation tax data are not available from 1963 to 1967.

5/ For 1974 and before, a farm was defined as any place with less than 10 acres from which \$250 or more of agricultural products were sold or any place of 10 acres or more from which \$50 or more of agricultural products were sold. For 1975 and following years, a farm is any place from which \$1,000 or more of agricultural products were sold.

Table 2--IRS farm returns, business receipts, total deductions, and depreciation by business organization, 1968-78

IRS farm returns	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Number of returns:											
Sole proprietorships	3,042,564	3,089,486	2,905,864	2,941,447	3,007,181	3,203,049	3,178,156	3,122,393	3,218,273	2,931,810	3,109,664
Partnerships	109,849	109,800	111,277	109,291	102,327	111,404	109,613	110,106	106,653	105,679	109,538
Corporations	19,978	20,446	24,106	25,401	27,474	34,517	37,314	39,623	42,293	46,315	50,242
All farm returns	3,172,391	3,218,752	3,041,247	3,076,138	3,136,982	3,348,970	3,325,083	3,272,122	3,367,219	3,083,804	3,269,444
Business receipts:											
Sole proprietorships	35,017,457	37,613,067	39,144,576	40,912,788	48,638,386	62,589,119	63,370,102	65,266,657	73,513,621	69,378,947	81,724,599
Partnerships	4,506,706	5,532,774	6,158,024	6,484,349	8,094,176	11,548,493	11,219,087	11,530,643	11,560,523	11,724,851	15,961,328
Corporations	5,745,317	7,750,474	8,994,847	8,423,467	9,501,143	17,896,092	18,389,091	21,223,128	23,546,550	26,279,006	30,907,475
All farm returns	45,269,480	50,896,315	54,297,447	55,820,604	66,233,705	92,033,704	92,978,280	98,020,428	108,620,694	107,382,804	128,593,402
Total deductions:											
Sole proprietorships	31,892,608	34,056,360	36,467,265	38,495,074	43,940,832	53,974,074	56,510,485	60,291,850	68,438,220	67,426,494	76,178,654
Partnerships	4,129,044	5,518,757	6,212,861	6,675,293	8,146,582	11,182,124	10,848,798	11,421,487	11,443,146	12,050,240	16,089,721
Corporations	5,885,368	8,022,093	9,500,901	8,844,152	9,782,084	18,162,574	19,129,817	21,863,014	24,488,264	27,470,672	31,799,569
All farm returns	41,907,020	47,597,210	52,181,027	54,014,519	61,869,498	83,318,772	86,489,100	93,576,351	104,369,630	106,947,406	124,067,944
Depreciation:											
Sole proprietorships	4,126,359	4,438,629	4,598,308	4,823,878	5,290,497	6,473,464	7,188,885	7,857,001	8,844,895	8,757,728	10,207,695
Partnerships	386,204	441,087	494,773	510,323	546,423	670,677	805,810	909,681	1,010,018	1,036,358	1,237,848
Corporations	259,118	324,193	369,972	367,699	413,131	597,010	740,773	858,301	977,882	1,164,235	1,330,757
All farm returns	4,771,681	5,203,909	5,463,053	5,701,900	6,250,051	7,741,151	8,735,468	9,624,983	10,832,795	10,958,321	12,776,300

1,000 dollars

Number

IRS sole proprietorship business receipts increased 29 percent and IRS partnership business receipts increased 43 percent, but IRS corporate cash receipts jumped 88 percent (table 2). The number of returns filed followed a similar trend. Sole proprietorship and partnership returns increased 6.5 percent and 8.9 percent, respectively, from 1972 to 1973, and corporation returns jumped 25.6 percent.

Corporate and partnership farm data may be a source of instability in the IRS aggregate farm data. Expenses cannot be related to farm receipts on Form 1120, U.S. Corporation Income Tax Return. The inability to link total expenses with income by type on Form 1120 forces IRS to assign each corporate return to the sector where the corporation earns its major source of income. All income and expenses contained in the corporate return are included in the sector to which corporate return has been assigned. For example, a corporation with 30 percent of its income derived from farming is classified as a farm corporation if farming is the largest source of income. Corporations with substantial farming operations can be excluded from IRS farm data under this classification scheme if farm income is not the major source of income.

The rapid jump in the number of IRS farm corporations from 1972 to 1973 may not be completely due to a classification problem but may reflect an economic trend. IRS farm corporations have increased every year from 1968 to 1978. However, farm corporations probably increased between 1972 to 1973 because of the shift of certain agricultural corporations by IRS to the farm sector to correspond to the Standard Industrial Code (SIC) established by USDA and the Census of Agriculture.

Partnerships suffer the same classification problems as corporations. IRS assigns each partnership return to the sector where the partnership earns its major source of income. All income and expenses contained in the partnership return are assigned to the sector to which the partnership return has been assigned. Comparisons between aggregate IRS and USDA data must therefore be viewed with caution.

The preceding overview focused on annual or short-term changes, primarily those two periods before and after 1973. High farm income and increases in larger farms altered the basic farm sector tax environment in 1973. These short-term comparisons, as well as long-term comparisons, are also affected by the existence of tax-loss farming and by differences in USDA and IRS definitions.

TAX-LOSS FARMING

Tax-loss farming could have a significant impact on the USDA measure of farm income, but the actual impact is difficult to ascertain. About 39 percent of all farmers reported a net farm loss in 1973, the year of record-high farm income, and 46 percent reported losses in 1978, a year of good farm income (table 3). Disposable per capita personal income reached 104 and 97 percent of the nonfarm population in 1973 and 1978, respectively. Thus, some proportion of farms, perhaps as much as 39 to

Table 3--IRS farm sole proprietorships, partnerships, and corporations with profits and losses, 1970-78

Item	Unit	1970	1971	1972	1973	1974	1975	1976	1977	1978
Farms with profits:										
Number	:Thousands :	1,740	1,691	1,893	2,057	1,790	1,743	1,771	1,560	1,774
Profit	:Mil. dols.:	6,904	7,120	9,837	15,805	16,455	14,754	15,069	12,818	17,033
Profit per farm	:Dollars :	3,968	4,211	5,197	7,684	9,193	8,465	8,509	8,217	9,601
Farms with losses:										
Number	:Thousands :	1,301	1,385	1,244	1,291	1,535	1,529	1,596	1,524	1,495
Losses	:Mil. dols.:	-3,630	-4,167	-4,136	-5,234	-8,299	-8,307	-8,625	-9,764	-9,363
Losses per farm	:Dollars :	-2,790	-3,009	-3,325	-4,054	-5,407	-5,433	-5,404	-6,407	-6,263
Farms with profits and losses:										
Number	:Thousands :	3,041	3,076	3,137	3,348	3,325	3,272	3,367	3,084	3,269
Net income	:Mil. dols.:	3,274	2,953	5,701	10,571	8,156	6,447	6,444	3,054	7,670
Net income per farm	:Dollars :	1,077	960	1,817	3,157	2,453	1,970	1,914	990	2,346
Percentage of farms reporting losses	:Percent :	43	45	40	39	46	47	47	49	46
Sole proprietorships	:Percent :	43	45	40	39	46	47	48	50	46
Partnerships	:Percent :	32	34	31	30	39	40	37	42	35
Corporations	:Percent :	47	45	38	33	41	37	41	39	36

46 percent, appear to have sustained tax losses in excess of their operating profits even in years of favorable returns.

About 80 percent of the 1976 farm returns with losses reported a loss of less than \$5,000. Comparing IRS farm tax-loss data against USDA distributions of farm income by value of sales class indicates that a large proportion of tax-loss farmers are smaller farmers. In determining taxable income, small farmers probably report a portion of household-related deductions such as property taxes and interest paid on the Schedule F rather than as an itemized deduction in Schedule A. Thus, farm tax losses can readily appear on the IRS Form 1040 for small farmers. Data from the 1978 Census of Agriculture indicate that small farms are primarily rural residences for retirees and persons not primarily engaged in farming. (See "A Statistical Analysis of the USDA Farm Income Concepts and Their Supporting Data" in this report.)

Farm losses of \$10,000 or more were reported in 1976 in about 9 percent of the farm tax-loss returns. Based on a study of 1970 IRS farm data, this latter group also accounted for about 5 percent of those individuals reporting farm losses but paid 56 percent of the income taxes paid by individuals reporting farm losses.

The average nonfarm income of \$18,669 for individuals reporting farm losses is substantially higher than the average nonfarm income of \$8,245 for individuals reporting farm profits (table 4). In addition, nonfarm income increased substantially as the size of the farm loss increased; meantime, the level of nonfarm income remained relatively constant for all levels of reported farm profit.

Other long-term changes that affect the relationship between IRS, USDA, and Census of Agriculture data include the definitions of a farm, farmers, sole proprietorships, landlords, partnerships, and corporations. These differences in definitions and the differences in the structure of the three data compilation systems also impair the direct correlations between IRS and USDA data.

FARMS AND FARMERS

IRS farm returns of 3.3 million in 1978 differed by 34 percent from the 2.4 million farms reported by USDA (table 1). IRS farms in table 1 include all the Schedule F's filed and all partnerships and corporations classified as farm businesses by IRS. One reason for the difference between the number of IRS and USDA farms is that USDA farms exclude "materially participating" landlords who are included in IRS sole proprietorship statistics. Second, a past USDA requirement stated that a farm of less than 10 acres can be classified as a farm only if the sales of agricultural products reached \$250 or more. Since 1975, USDA has defined a farm as a place with sales of agricultural products of at least \$1,000. No minimum sales requirements are set by IRS.

Table 4--IRS farm and off-farm income, by individuals
reporting farm profits and losses, per farm, 1976

Item	Number of returns	Adjusted gross income	Farm income or loss	Off-farm income
	Thousands		Dollars	
Farm profits:				
\$50,000 or more	17	81,673	74,911	8,706
\$25,000 to \$49,999	81	37,671	32,979	5,684
\$10,000 to \$24,999	231	21,196	15,624	6,110
\$5,000 to \$9,999	210	13,291	7,178	6,507
\$2,000 to \$4,999	252	11,027	3,233	8,226
\$1,000 to \$1,999	179	9,872	1,441	9,148
\$1 to \$999	358	10,512	397	10,851
All farms with profits	1,328	15,366	7,716	8,245
Farm losses:				
\$50,000 or more	12	16,362	-104,448	122,080
\$25,000 to \$49,999	24	17,366	-33,942	51,602
\$10,000 to \$24,999	93	15,423	-15,154	32,348
\$5,000 to \$9,999	191	13,571	-6,836	20,641
\$3,000 to \$4,999	228	13,638	-3,842	18,151
\$1 to \$2,999	917	13,329	-1,184	14,864
All farms with losses	1,465	13,631	-4,568	18,669
All individuals	2,793	14,533	1,268	13,877

Underlying definitions and data compilation procedures by IRS and USDA must be completely understood before comparing IRS farm data to USDA farm data. The USDA net farm income series excludes landlords. Instead, all farm receipts by landlords and expenses paid by landlords appear in operator's receipts and expenses. USDA then adjusts operators' expenses to net out landlords' cash receipts and expenditures in the net rent paid to landlords series. USDA recognizes that landlords can also be operators so farm income earned by operators is increased for farm rent received. These two adjustments provide a systematic economic accounting of all the farm sector inputs and sales of agricultural products within a single income account, the net farm income of operators series. The USDA net farm income series, in addition to monitoring the income and well-being of farmers, is also the statistical base used to develop the productivity series and the farm sector component of the national input-output table.

Sole Proprietorships

Sole proprietorships account for the vast majority of farms for both IRS and USDA. IRS sole proprietorships equaled 96 percent of total IRS farms in 1974, and USDA sole proprietorships equaled 90 percent of total USDA farms (table 5). The difference between the number of IRS and USDA sole proprietorships probably occurred because "materially participating" landlords were included in IRS sole proprietorship data. Thus, while the percentage distribution of IRS Schedule F returns and USDA sole proprietorship farms differed by 6 percent in 1974, the percentage of USDA and IRS sole proprietorship business receipts to total receipts were almost identical, 68 percent for USDA sole proprietorships and 68.1 percent for IRS sole proprietorships. The number of USDA sole proprietorships dropped 14 percent from 1974 to 1978, and the number of IRS sole proprietorships decreased 2 percent (table 6). The larger percentage decrease in the number of USDA sole proprietorships probably occurred because, beginning in 1975, USDA enumerated farms with sales of only \$1,000 or more.

Each Schedule F (Farm Income and Expenses) filed with the Form 1040 (Individual Income Tax Return) is reported as a farm sole proprietorship by IRS. Farm proprietorships can file more than one Schedule F because they own more than one farm or because separate books are kept for different operations. A recent IRS study indicates that most sole proprietorships operating several farms probably file only one Schedule F for all their farm operations.

USDA net sole proprietorship farm income was \$18.71 billion in 1974 (table 7) and \$18.66 billion in 1978 (table 8). USDA net farm income of sole proprietorships was 72 percent of total USDA net farm income in 1974 and 70 percent in 1978.

Landlords

Two Schedule F's may be filed for the same farm under a crop-share rental arrangement, one reporting the tenant's share of the income and expenses and one reporting the share of a landlord who "materially participated" in the operation of the farm. The term "materially participating" is not defined by IRS. Each landlord must determine whether to file a Schedule F for a "materially participating" landlord or a Form 4835 (Farm Rental Income and Expenses and Summary of Gross Income from Farming or Fishing) and Schedule E (Supplemental Income Schedule) for a "nonmaterially participating" landlord as recommended by IRS. The Schedule F precludes identifying "materially participating" landlords reported in IRS sole proprietorship data.

"Nonmaterially participating" landlords and all landlords receiving cash rent file a Form 4835 and carry the net income (or loss) amount to Schedule E. Before 1971, only landlords who filed a Schedule F were included in IRS farm data. Beginning in 1971, however, landlords were required to file a Form 4835 to support their Schedule E farm rental information. Therefore, all landlords could be included in IRS farm sole proprietorship data in tables 1 and 2 beginning with 1971. The inclusion of landlord data from Form 4835 in sole proprie-

Table 5--USDA and IRS farm businesses and business receipts, 1974

Item	USDA		IRS	
	Total	Percentage	Total	Percentage
		of total		of total
	Thousands	Percent	Thousands	Percent
Business:				
Sole proprietorships	<u>1/</u> 2,507	89.7	3,178	95.6
Partnerships	240	8.6	110	3.3
Corporations	48	1.7	37	1.1
All farms	2,795	100.0	3,325	100.0
	Million		Million	
	dollars		dollars	
Business receipts:				
Sole proprietorships	<u>1/</u> 63,762	68.0	63,370	68.1
Partnerships	13,128	14.0	11,219	12.1
Corporations	16,878	18.0	18,389	19.8
All farms	93,768	100.0	92,978	100.0

1/ Includes cooperatives, trusts, and estates.

Table 6--USDA and IRS farm businesses and business receipts, 1978

Item	USDA		IRS	
	Total	Percentage	Total	Percentage
		of total		of total
	Thousands	Percent	Thousands	Percent
Business:				
Sole proprietorships	<u>1/</u> 2,146	88.1	3,109	95.1
Partnerships	239	9.8	110	3.4
Corporations	51	2.1	50	1.5
All farms	2,436	100.0	3,269	100.0
	Million		Million	
	dollars		dollars	
Business receipts:				
Sole proprietorships	<u>1/</u> 72,386	62.0	81,725	63.6
Partnerships	18,913	16.2	15,961	12.4
Corporations	25,451	21.8	30,907	24.0
All farms	116,750	100.0	128,593	100.0

1/ Includes cooperatives, trusts, and estates.

Table 7--USDA farm income, production expenses, and off-farm income,
by business organization, 1974

Item	Sole proprietorships	Partnerships	Corporations	Others not elsewhere classified ^{1/}	All farms
<u>Million dollars</u>					
Total farms:					
Gross farm income ^{2/}	67,919	13,843	15,754	520	98,036
Production expenses	49,207	9,833	12,621	374	72,035
Net farm income	18,712	4,010	3,133	146	26,001
Off-farm income	25,490	2,645	--	--	28,135
Total income of farm operator families	44,202	6,655	--	--	54,136
<u>Dollars</u>					
Per farm:					
Net farm income	7,482	16,683	65,937	23,003	9,303
Off-farm income	10,193	11,003	--	--	10,066
Total income of farm operator families	17,675	27,686	--	--	19,369

-- = not estimated.

^{1/} Institutional farms including cooperatives, trusts, and estates.

^{2/} USDA gross farm income equals cash receipts, Government payments, other farm income, home consumption, imputed rental value of farm operators' dwellings, and net inventory change.

^{3/} Off-farm income is estimated by USDA for sole proprietorships and partnerships only.

torship statistics resulted in a more complete accounting of farm activity. Double accounting of the numbers of farms (returns) can occur because some farmers are also landlords.

Comparisons of USDA and IRS sole proprietorship business receipts, expenses, and depreciation data were enhanced by including all landlords in IRS sole proprietorship data. However, USDA and IRS sole proprietorship off-farm income data and Federal income taxes paid data are not so directly correlated. Each Schedule F is matched by IRS to the Form 1040 to compile off-farm income and Federal income taxes paid data. Data for landlords are necessarily combined along with operator's data and, as stated previously, cannot be separated.

Partnerships

USDA partnerships were more than double IRS partnerships in 1974 and 1978. The significant difference between reported USDA and IRS partnerships occurs because the IRS definition

Table 8--USDA farm income, production expenses, and off-farm income by business organization, 1978

Item	Sole proprietorships			Partner- ships			Subchapter S Corporations			Subchapter C Corporations			Others not : farms		
	: torships :	: : ships :	: : ships :	: Family :	: Non- family :	: Total :	: Family :	: Non- Family :	: Total :	: Family :	: Non- Family :	: Total :	: elsewhere :	: classified 1/:	
Million dollars															
Total farms:															
Gross farm income ^{2/}															
Production expenses															
Net farm income															
Off-farm income ^{3/}															
Total income of farm operator families															
Per farm:															
Net farm income															
Off-farm income															
Total income of farm operator families															

-- = not applicable.

^{1/} Institutional farms including cooperatives, trust, and estates.

^{2/} USDA gross farm income equals cash receipts, Government payments, other farm income, home consumption, imputed rental value of farm operators' dwellings, and net inventory change.

^{3/} Off-farm income is collected by USDA for sole proprietorships and partnerships only.

is more legalistic (rising from a filing requirement) than the USDA definition which is social-economic.

Partnership under the USDA definition has two or more persons joined together to carry on the farming operation. USDA and the Census of Agriculture do not determine in their surveys if the partners are legally liable for the obligations of the partnership. Under USDA and Census of Agriculture definitions, each partner must contribute in some way, money, property, labor, or skill, and share in the profits and losses in accordance with agreed proportions. USDA enumerators interview the senior partner to collect all farm income and expense data of the partnership. In parent-child arrangements, USDA enumerators accept the definition of the respondent on whether the farm is a partnership or two independent operations. In recent years, wives and husbands have increasingly reported as partnerships instead of sole proprietorships due to changing social-economic values. USDA and the Census of Agriculture need to insure that only legally organized partnerships respond to their questionnaire if USDA and IRS partnership data are to be accurately compared and analyzed.

Subchapter S corporations are taxed as partnerships. Another possible reason the number of USDA partnerships exceeds the number of IRS partnerships is that Subchapter S corporation farmers may respond as partnerships to USDA and Census of Agriculture surveys. A Subchapter S corporation is a small corporation (10 or fewer shareholders and one class of stock) that elects to be taxed like a sole proprietorship or partnership.^{1/} A Subchapter C corporation is a standard business corporation, a separate taxable entity for corporate income tax purposes.

In 1974 and 1978, business receipts of USDA partnerships were a larger percentage of total receipts than IRS partnerships. Business receipts of USDA partnerships totaled 14 percent of USDA business receipts in 1974 (table 5), and IRS partnership receipts totaled 12.1 percent of total IRS business receipts. Business receipts of USDA partnerships were 16.2 percent of total USDA receipts in 1978 (table 6), and IRS partnership receipts equaled 12.4 percent of total IRS business receipts.

USDA net farm income per partnership is more than double sole proprietorship, but about three partners share farm income in partnerships. USDA partnerships accounted for 15 percent of 1974 net farm income (table 7) and 16.3 percent of 1978 net farm income (table 8).

Corporations

IRS farm corporations in 1974 equaled 77 percent of USDA corporations but accounted for a larger share of total farm business receipts. IRS farm corporations accounted for 19.8 percent of IRS farm business receipts, and USDA farm corporations accounted for 18 percent (table 5). The number of

^{1/} Recent tax laws have increased the maximum number of shareholders allowed for a Subchapter S corporation.

USDA and IRS farm corporations were about equal in 1978, but IRS farm corporation business receipts exceeded USDA business receipts by 21 percent.

USDA farm corporations accounted for 12 percent of USDA net farm income in 1974 (table 7) and 13 percent in 1978 (table 8). USDA net farm income per USDA corporation reached \$65,937 in 1974 (table 7) and \$71,020 in 1978 (table 8). Net farm income per Subchapter C corporation of \$334,475 in 1978 exceeded the farm income per Subchapter S corporation of \$57,708 by 480 percent. Farm income for nonfamily-held corporations exceeded family-held corporations for both Subchapter S and Subchapter C corporations. Farm income per family-held Subchapter C corporation was 45 percent of nonfamily-held Subchapter C, while per family-held Subchapter S corporation income was 59 percent of nonfamily-held Subchapter S.

Total Subchapter S farm corporate income accounted for 78 percent of total USDA farm corporate income (table 8). Family-held corporations accounted for 84 percent of all USDA Subchapter S corporate farm income and 33 percent of all USDA Subchapter C corporate farm income.

The large percentage of Subchapter S corporations and Subchapter C family-held corporations suggests that farm corporations may not have extensive nonfarm business activity. If so, IRS and USDA farm corporation data comparisons would seem valid.

The rate of IRS corporate net farm income earned on sales was low compared with sole proprietorships and partnerships. Corporations earned a net farm income of more than \$1 billion on sales of \$30.9 billion in 1978, a ratio of 3.4 percent. Sole proprietorships in 1978 earned a net farm income of \$5.5 billion on sales of \$81.7 billion, a ratio of 6.8 percent. Partnerships earned a net farm income of \$1 billion on sales of \$16 billion, a ratio of 6.8 percent. Corporations and, perhaps, even partnerships may be paying out net farm income as wages and salaries to their stockholders and/or members to decrease net farm income and, consequently, income taxes paid. The effect of this procedure may be included in the wages and salary component data collected in USDA's annual Farm Production Expenditure Survey. Paying out farm income as farm wages may result in USDA net farm income being understated. The effect of paying out farm income as wages is not as great as IRS corporate farm data might initially suggest because Subchapter S corporations do not necessarily earn profits. Instead, farm earnings are allocated to the partners.

BUSINESS RECEIPT DEFINITIONS AND ACCOUNTING METHODS

IRS total business receipts of sole proprietorships and partnerships are reported as two components: income from sales and operations and other business income. For farms, income from sales and operations equals all sources of income relating to the farm operations, including cash receipts, patronage dividends from farmers' cooperatives, agricultural program payments, commodity credit loans, credit for Federal excise tax on

gasoline, and State gasoline tax refunds. IRS cash receipt data cannot be separated from IRS income from sales and operation data.

Other farm business income reported in the Schedule F probably consists of interest, rents, royalties, grazing fees, and recreational income. Other business income of IRS sole proprietorships and partnerships was less than 1 percent of total business receipts in 1976.

USDA gross farm income includes all IRS farm income from sales and operations categories except State and Federal gasoline tax credits. USDA cash receipts amounted to 94 percent of USDA gross income in 1976. Other sources of farm income included in USDA gross income are recreational income, home consumption, imputed net value change in farm inventories, and imputed gross rental value of farm dwellings.

USDA farm business receipts in table 1 have been reconciled to the IRS definition of farm business receipts. USDA business receipts in table 1 were the sum of cash receipts including Commodity Credit Corporation loans, agricultural program payments, and other farm income including patronage dividends, machine hire and customwork, and recreational income.

IRS farm receipts do not include certain livestock counted as farm receipts in USDA gross farm income. Sales of draft, breeding, dairy, or sporting livestock reported on Schedule D (Gains and Losses from the Sales and Exchange of Property) are not included in IRS farm receipts. Excluding draft, breeding, and dairy animal sales reported in Schedule D decreases IRS business receipts below farm cash receipts estimated by USDA.

USDA farm receipts do not include sporting animals. Sales of sporting animals reported in Schedule F are not compiled in IRS farm data because IRS follows the USDA farm definition.

The timing of receipts and expenses is affected by the method of accounting. All farm proceeds are income in the year actually received under the cash method of accounting. Accrual accounting requires farmers to report their proceeds as income in the year earned regardless of when payment is received. USDA cash receipts are based on the value of sales concept which is a cash accounting concept.

No major distortion is caused in IRS and USDA business receipt comparisons by the tax accounting method employed because farmers use predominantly the cash method of accounting in reporting their income for tax purposes. Over 97 percent of all farm proprietors choose the cash accounting method of reporting farm income and expenses. The use of the cash accounting method varies by type of farm, ranging from a low of approximately 92 percent for animal specialty farms to a high of over 99 percent for fruit, tree nut, and vegetable farms. Approximately 99 percent of field crop farms and 96 percent of livestock farms use the cash accounting method.

Inventory valuation distortions are minimal when comparing USDA and IRS business receipt data because crops and livestock are not inventoried under the cash method of accounting. Crops and livestock are inventoried under the accrual method. Unlike inventory valuation in nonfarm businesses, farm inventories are valued at approximate production cost (unit livestock method) or estimated market price (farm price method). Profits may rise under the accrual method because of an accounting increase in the valuation of inventories; for example, growing livestock valued by the farm price method.

Type of Farm

Farm production specialization by type of farm is high. IRS business receipts are highly correlated with commodity production for those types of farms with high production specialization. For example, 91.8 percent of total dairy cash receipts in 1978 were accounted for by dairy farms based on Census of Agriculture data (table 9). Eighty-six percent of total cattle cash receipts were accounted for by cattle farms. Specialization in primary production by type of farm in 1978 varied from a low of 76.3 percent for cotton farms to a high of 97.7 percent for poultry farms.

IRS business receipts by type of farm are available for sole proprietorships and partnerships but not corporations. Agricultural commodities produced by sole proprietorships and partnerships in 1978 ranged from a high of 98.1 percent for hogs and pigs down to 60.7 percent for fruits and nuts (table 9).

Gross Cash Receipts

Three statistical adjustments are required to compare USDA and IRS noncorporate commodity cash receipts by type of farm in table 10. For example, two adjustments are required to develop estimates of USDA dairy cash receipts of USDA dairy sole proprietorship and partnership farmers. USDA dairy receipts of \$11.5 billion of all USDA dairy farmers (sole proprietorships, partnerships, and corporations) are estimated in table 10 by multiplying USDA total dairy receipts of \$12.5 billion by 91.8 percent, the rate of specialization in primary production. The USDA noncorporate share of sole proprietorships and partnerships equaled 92 percent of \$11.5 billion, or \$10.6 billion. In the third and last adjustment, IRS dairy receipts of \$9.2 billion earned by IRS sole proprietorship and partnership dairy farmers are estimated in table 10 by multiplying IRS total business receipts of sole proprietorship and partnership dairy farmers by 82.4 percent, the percentage of dairy receipts to total receipts of dairy farms. Comparing commodity cash receipts by type of farm in table 10 must be done with care because of the possible wide range of error created by the three statistical adjustments.

Contractual arrangements are primarily responsible for the difference between IRS and USDA vegetable and melon and poultry and egg receipts in table 10. Broiler producers report contractor payments for services rendered to IRS as income received and not the total value of the broilers produced. In contrast, USDA and the Census of Agriculture obtain the total market value of the broilers produced (as well as the value of production inputs supplied by the contractor such as feed) in

Table 9--Production specialization, by type of farm, 1974 and 1978

Farm type	Specialization in primary production ^{1/}		Noncorporate share of primary production ^{2/}		Primary cash receipts as a share of total cash receipts ^{3/}	
	1974	1978	1974	1978	1974	1978
	<u>Percent</u>					
Crop farms:						
Grain	80.3	77.6	95.6	91.4	83.5	85.0
Cotton	60.1	76.3	84.2	90.3	73.5	78.0
Tobacco	76.5	79.9	96.5	95.9	77.4	80.6
Other field crops	79.2	77.3	67.6	65.9	56.7	55.7
Vegetables and melons	76.8	86.6	63.1	69.0	84.9	85.6
Fruits, nuts, and berries	92.6	94.0	65.8	60.7	95.1	95.5
Livestock farms:						
Cattle and calves	81.4	86.1	67.3	66.5	--	--
Hogs and pigs	74.7	82.1	94.8	98.1	^{4/} 87.3	^{4/} 88.5
Sheep and lambs	83.4	89.2	77.2	73.7	--	--
Dairy	93.7	91.8	93.6	92.0	80.0	82.4
Poultry	97.0	97.7	71.6	72.0	94.5	95.0

-- = not applicable.

^{1/} All farms including sole proprietorships, partnerships, and corporations. Specialization in primary production means, for example, that 80.3 percent of total 1974 grain is sold by grain farms. ^{2/} Sole proprietorships and partnerships only. Noncorporate share of primary production means, for example, that sole proprietorships and partnerships sold 95.6 percent of total 1974 grain cash receipts. Corporations accounted for the remaining 4.4 percent. ^{3/} All farms including sole proprietorships, partnerships, and corporations. Primary cash receipts, as a share of total cash receipts means, for example, 83.5 percent of total 1974 cash receipts of grain farms are grain cash receipts. ^{4/} Includes cattle and calves, hogs and pigs, and sheep and lambs.

Source: Census of Agriculture.

their surveys which, in turn, is reported as total farm cash receipts (and farm production expenses). Thus, in table 10, IRS poultry and egg noncorporate business receipts are \$3.2 billion less than USDA cash receipts, a difference of 44.4 percent. IRS vegetable and melon noncorporate cash receipts were \$1.5 billion less than USDA cash receipts, a difference of 57.5 percent. The total difference of the two commodity groups reached \$4.7 billion. The difference does not automatically imply that either IRS or USDA data are incorrect; as stated previously, the lower IRS business receipt data for poultry and egg business receipts and vegetables and melons

Table 10--Comparison of IRS and USDA noncorporate farm cash receipts, by commodity, 1978

USDA noncorporate cash receipts										IRS noncorporate business receipts 1/									
Type of farm	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)										
	Cash receipts by major commodity group 2/	Specialization in primary production	Primary production, cash receipts (1 x 2)	Percentage produced by sole proprietorships and partner-ships	Noncorporate primary cash receipts (3 x 4)														
	Mil. dols.	Percent	Mil. dols.	Percent	Mil. dols.		Million dollars		Percent										
Field crop farms:																			
Grain	30,359	77.6	23,559	91.4	21,533	N/A	N/A	N/A	N/A										N/A
Cotton	3,465	76.3	2,644	90.3	2,387	N/A	N/A	N/A	N/A										N/A
Tobacco	2,604	79.9	2,081	95.9	1,995	N/A	N/A	N/A	N/A										N/A
Other field crops	3,271	77.3	2,528	65.9	1,666	N/A	N/A	N/A	N/A										N/A
Total	--	--	--	--	27,581	40,498	80.6	32,641	118.3										
Vegetables and melons	5,941	86.6	5,145	69.0	3,550	2,386	85.6	2,043	57.5										
Fruits, nuts, and berries	5,764	94.0	5,418	60.7	3,289	3,325	95.5	3,175	96.5										
Livestock farms:																			
Cattle and calves	28,111	86.1	24,204	66.5	16,095	--	--	--	--										--
Hogs and pigs	8,754	82.1	7,187	98.1	7,050	--	--	--	--										--
Sheep and lambs	529	89.2	472	73.7	348	--	--	--	--										--
Total	--	--	--	--	23,493	31,661	88.5	28,020	119.3										
Dairy	12,509	91.8	11,483	92.0	10,565	11,171	82.4	9,205	87.1										
Poultry and eggs	8,110	97.7	7,923	72.0	5,705	2,673	95.0	2,540	44.5										
Total business receipts	116,750	--	116,750	77.7	90,715	97,686	--	97,686	107.7										

-- = not applicable.

N/A = not available.

1/ USDA receipts in column 1 are cash proceeds from the sale of crops and livestock and CCC loans. IRS business receipts include cash proceeds for the sale of crops and livestock, patronage dividends, agricultural program payments, CCC loans, and Federal and State tax credits.

2/ Cash receipts in column 1 are for major commodity groups and are not for type of farm. For example, total USDA grain cash receipts equal \$30.4 billion in 1978 (column 1); that is, total cash receipts of grain farms do not equal \$30.4 billion.

emanate from the exclusion of the contractors' value of farm production. Other IRS business receipts as a percentage of USDA cash receipts by type of farm ranged from a low of 87.1 percent for dairy farms up to a high of 119 percent for livestock farms.

To reconcile IRS total business receipt data to USDA total cash receipt data, the contractors' value of vegetable, melon, poultry, and egg cash receipts of \$4.7 billion should be added to 1978 IRS total business receipt data. Adding this to IRS total business receipts increases them as a percentage of USDA total cash receipts from 110 to 114 percent, a difference of \$16.5 billion.^{2/} This high-percentage difference indicates that USDA estimates of total cash receipts and gross farm income may be understated for more current years.

Certain structural aspects of the IRS data system reduce IRS business receipts compared with USDA cash receipts. IRS business receipts data exclude nonfilers as well as the contractors' share of farm value. Breeding and dairy animals sales reported on Schedule D reduce IRS business receipts compared with USDA cash receipts. Another effect reducing the amount of IRS business receipts compared with USDA cash receipts is the underreporting of business receipts documented under the Taxpayer Compliance Measurement Program (TCM). The purpose of the TCM Program is to monitor compliance with tax reporting requirements. IRS does not identify questionable returns for audit. In 1976, 11,125 taxpayers filing a Schedule F were randomly selected for audit under the TCM Program. Under the audit, gross receipts were increased 2 percent, total deductions (expenses) were reduced 4.4 percent, and net profit was increased 50.9 percent. In 1973, gross receipts were increased 4.9 percent, total deductions were reduced 3.9 percent, and net profit was increased 30.5 percent.

Livestock purchased in the USDA farm income accounts are estimated using livestock shipments across State lines which historically were the only assured annual data source available. These inshipment data, of course, exclude livestock sales and purchases among farmers within a State. Because in-State purchases and sales were assumed to net out to zero, the USDA farm income account has historically excluded in-State purchases from farm production expenses and in-State sales from livestock cash receipts. The inclusion of nonfarm business receipts and in-State livestock sales in IRS farm business receipts data increased IRS farm business receipts compared with USDA farm cash receipts.

The widening difference between USDA cash receipts and IRS business receipts for more current years in table 1 cannot be

^{2/} IRS business receipts of \$128.6 billion in table 1 are \$11.8 billion greater than USDA cash receipts. Adding the contractors' value of farm production of \$4.7 billion to IRS business receipts increases the difference to \$16.5 billion.

entirely attributed to the farm classification problems surrounding partnerships and corporations. IRS sole proprietorships accounted for \$12.3 billion, or 58 percent, of the \$21.2-billion increase in IRS business receipts from 1977 to 1978 (table 2). However, total USDA farm cash receipts of proprietorships, partnerships, and corporations increased only \$18 billion from 1977 to 1978 (table 1).

Accurately identifying the reason for the substantial difference between IRS business receipt data and USDA cash receipt data was beyond the limitations set in this paper. Instead, certain cash receipt items known to be statistically difficult to measure are discussed which warrant further empirical investigation and review.

Livestock Sales

Contractual marketing arrangements widen the statistical discrepancy between IRS and USDA noncorporate livestock cash receipts in table 10. Based on the 1979 Census of Farm Finance, the total value of livestock commodities produced under production contracts reached \$5.7 billion in 1979; farmers received \$1.8 billion of the contract value (table 11). The contractors received about \$4 billion (\$5.7 billion less \$1.8 billion), or 9 percent of the total 1979 value of livestock cash receipts of \$42.2 billion (table 11). IRS livestock cash receipts of \$28 billion in table 10 are \$4.5 billion greater than USDA livestock cash receipts of \$23.5 billion. Adding the contractors' value of livestock production would further increase 1978 IRS livestock cash receipts compared with USDA livestock cash receipts, but 1978 livestock contract data are not available.

In-State purchases (sales) estimated at \$14.8 billion in 1978 also likely explain much of the \$16.5-billion difference between IRS and USDA total cash receipts.

Livestock cash receipts are difficult to estimate because livestock sales can be intermediate transactions among farmers (nonslaughter sales) and final transactions (slaughter sales). The nonslaughter sales component of livestock cash receipts equals livestock purchased in the farm production expenses account. Slaughter sales are based, in part, on federally inspected livestock. Given the conceptual differences between slaughter and nonslaughter sales, a review of the methodology to estimate livestock cash receipts as well as livestock purchased is warranted to insure in-State purchases are properly netted out with in-State sales. Collecting livestock sales data in future USDA and Census of Agriculture surveys for final sales for slaughter and sales to other farmers will assist in evaluating federally inspected slaughter data to estimate USDA livestock cash receipts.

Poultry and Eggs

Farmers received \$5.1 billion, or 47 percent of total 1979 poultry and egg cash receipts of \$10.7 billion based on the 1979 Agriculture Census of Farm Finance (table 11). In this instance, the 1978 IRS data indicating farmers received 44.5

Table 11--Total value of agricultural commodities
produced under contract, 1979

Type of farm	: :Total value of: : agricultural : commodities : marketed <u>1/</u> : :	: :Total value of: : agricultural : commodities : produced under: : contract :	: : Operators' : share of : contract : value :
		<u>Million dollars</u>	
Cash grain	: 28,211	: 302	: 150
Vegetables and melons <u>2/</u>	: 3,239	: 91	: 65
Livestock farms, except dairy, poultry, and animal specialty <u>3/</u>	: 42,181	: 5,745	: 1,785
Feedlots	: 16,509	: 5,203	: 1,661
Poultry and eggs	: 10,715	: 6,338	: 706
All farms	: 122,751	: 12,818	: 2,840

1/ Includes the value of agricultural commodities produced under contract.

2/ Excludes potatoes. USDA vegetable and melon cash receipts include potatoes.

3/ Includes feedlots.

Source: 1979 Agriculture Census of Farm Finance.

percent of total 1978 poultry and egg cash receipts supports the statistical validity of USDA estimates of poultry and egg cash receipts (table 10).

Vegetables and Melons USDA estimates of vegetable and melon cash receipts appear accurate based on 1978 IRS data. IRS vegetable and melon noncorporate cash receipts were only 57.5 percent of USDA noncorporate vegetable and melon cash receipts. Data from the 1979 Agriculture Census of Farm Finance indicated the contractors' farm share value of vegetables and melons is minimal. Only \$91 million of 1979 vegetable and melon cash receipts of \$3.2 billion were produced under contract, and the contractors' share amounted to only \$26 million.

Census vegetable and melon cash receipt data appear to be substantially understated. USDA vegetable and melon cash receipts equaled \$6.5 billion in 1979 compared with only \$3.2 billion for Census (table 11). USDA noncorporate 1978 vegetable and melon cash receipts were 74 percent greater than those of IRS.

The 1979 Census data of \$3.2 billion, if increased by the 74-percent difference between USDA and IRS data, hits \$5.6 billion, much closer to the \$6.5 billion estimated by USDA. Thus, IRS data also support the statistical validity of USDA estimates of vegetable and melon cash receipts. A possible explanation why Census vegetable and melon cash receipts were so low compared with USDA is the possible confusion by respondents with production and marketing contracts. Farm products may be produced and marketed under a production contract, marketing contract, or a combination of both. Production contracts specify the kind and amount of farm product, the operations to be performed during production, and the inputs supplied by the contractors. Marketing contracts usually do not specify operations to be performed nor do they provide for contractor inputs. In the 1979 Agriculture Census of Farm Finance, respondents were requested to report separately production contract sales and input data. Sales under a marketing contract were supposed to be reported with total sales "from this place," but many, perhaps, were not.

Further investigation of the discrepancy between Census and USDA vegetable and melon cash receipts is needed. Obtaining both production and marketing contract sales will probably be required in the future. Livestock and poultry sales, which were primarily production contract sales, were not similarly affected by marketing contract sales as were vegetable and melon sales. Farm data collection by mail surveys such as the 1979 Agriculture Census of Farm Finance is increasingly difficult compared with field enumerator-conducted surveys because the complexity of the farming sector is increasing.

Field Crop Sales

IRS noncorporate field crop business receipts equaled 118.3 percent of USDA noncorporate field crop cash receipts. Field crops include food grains, feed grains, soybeans, cotton, tobacco, and other field crops. The number of crops makes it difficult to determine why aggregate USDA field crop cash receipts differ so substantially from aggregate IRS field crop cash receipts. More detailed IRS field crop business receipt data by commodity would be useful. Annual cash receipts for feed crops are especially difficult to estimate because feed crops may be sold or used on the farm where produced.

Dairy

The gap between IRS and USDA dairy cash receipt data is disappointing, given that dairy farming is highly specialized and sole proprietorships and partnerships account for 92 percent of total dairy production. Given these two high

specialization ratios, IRS dairy cash receipts should match closely USDA dairy cash receipts. Instead, IRS noncorporate dairy cash receipts totaled only 87.1 percent of USDA's.

Summary of IRS Business Receipts

A major reason for the difference between the magnitude of IRS and USDA cash receipts is the exclusion of contractors' farm share from IRS business receipt data and in-State live-stock sales from USDA livestock cash receipts. The structure of the IRS data processing system also hinders direct comparisons between IRS and USDA cash receipt data because nonfarm business receipts and expenses are included in IRS farm partnership and farm corporation data.

IRS business receipts data imply that USDA 1978 cash receipts were understated by about 14 percent, or \$16.5 billion. The contractors' value of farm cash receipts for vegetables, melons, and poultry of \$4.7 billion and in-State livestock purchases estimated at \$14.8 billion probably explain much of the difference between IRS and USDA cash receipts.

FARM PRODUCTION EXPENSES

The statistical discrepancy between reconciled IRS total deductions and USDA total farm production expenses averaged 3.3 percent from 1973 to 1978 (table 12). IRS total deductions were reduced 3.9 percent in 1973 and 4.4 percent in 1976 under the TCM Program. Therefore, the statistical discrepancy between IRS and USDA farm expenses data becomes almost negligible from 1973 to 1978 with the results of the TCM Program considered. The negative statistical discrepancy between IRS and USDA farm expenses from 1970 to 1972 probably arises because certain agricultural corporations were excluded by IRS from the farming sector during that period.

Reconciling IRS to USDA farm expenses requires adjustments for in-State livestock purchases, depreciation valuation, interest paid, share rent, and tax loss farming. Even after these adjustments, comparisons between IRS and USDA expense data are still affected by farmers timing their expenditures to keep income taxes down, such as the previously observed prepayment of 1974 inputs in calendar year 1973.

No adjustments were made for property taxes, labor costs, and land improvements to reconcile IRS total deductions to USDA farm production expenses. These expense items are reviewed, however, because they are separately reported by IRS and because they affect the relationship between IRS total deductions and USDA production expense data.

Tax-Loss Farming

To reconcile IRS total deductions to USDA total farm production expenses in table 12, it is assumed that production expenses of tax-loss farmers are not included in USDA farm production expenses data for farms with sales of more than \$5,000. Two explanations are offered to support this assumption. First, the requirement that farmers have a minimum of \$1,000 sales of agricultural products may eliminate many IRS tax-loss farmers from USDA and Census of Agriculture surveys. Second,

Table 12--Reconciliation of IRS total deductions and USDA total production expenses, 1970-78

[illegible]

N/A = not available.

it is hypothesized that farmers may separate tax-loss related expenses reported to IRS from total farm production expenses and report only true economic farm production expenses on voluntary nontax-oriented surveys.

For example, 46 percent of farmers reported farm tax losses to IRS in 1978, but only 14 percent of farmers reported farm losses to the voluntary Current Population Survey (CPS). This effect was first discussed by Budd and Yuskovage in their attempt to reconcile IRS farm income data to CPS farm income. IRS farm income was about one-half of CPS farm income. Since the CPS follows the USDA definition of a farm, the effect of farmers reporting only true economic income to the CPS survey may actually again reflect the impact of excluding farms with sales of less than \$1,000.

The two groups, tax-loss farmers and commercial farmers suffering legitimate economic losses, are statistically difficult to separate within aggregate IRS and USDA data. A very rough estimate of the potential magnitude of 1978 farm production expenses related to tax-loss farming is made using aggregate IRS farm business receipt and deductions data of businesses with profits and losses in table 13. In 1978, total deductions of \$81.9 billion equaled 84.8 percent of the \$96.5 billion in business receipts of those farm businesses reporting farm profits. In contrast, total deductions of \$42.2 billion was 131.5 percent of the \$32.1 billion of business receipts of those farm businesses reporting farm losses.

If farm businesses reporting losses in 1978 had operated as efficiently as farm businesses reporting profits, the total deductions of nonprofit farms would have matched 84.8 percent of their business receipts of \$32.1 billion, or \$27.2 billion. Actual farm expenses of IRS tax-loss farmers were estimated at about \$15 billion in 1978, the difference between the reported total deductions of \$42.2 billion and the estimated \$27.2 billion for efficient operation.

For all other years, expenses related to tax-loss farming equal the 1978 estimated benchmark of about \$15 billion adjusted by the percentage change in IRS total deductions. For example, IRS total deductions of \$83.3 billion in 1973 equaled 67.2 percent of 1978 total deductions of \$124 billion. Expenses related to IRS tax-loss farming in 1973 of \$10.1 billion in table 12 are estimated at 67.2 percent of the 1978 benchmark.

The basic problem with the estimation methodology is that legitimate economic losses of commercial farmers are included in the estimate of IRS expenses related to IRS tax-loss farming. This is no more defensible than the assumption that all farm losses are real. The error created by the methodology is perhaps somewhat minimized because the benchmark year of 1978 was a year of high farm income when commercial farmers suffered minimal economic losses compared with other years. Currently, available aggregate IRS data do not permit a more refined estimate of IRS farm expenses related to IRS tax-loss farming.

Table 13--IRS farm business receipts and total deductions of sole proprietorships, partnerships, and corporations reporting profits and losses, 1970-78

Year	Business receipts				Total deductions ^{1/}			
	Businesses with and without profit		Businesses with profit		Businesses with and without profit		Businesses with profit	
	Businesses with and without profit	Businesses with profit	Businesses with and without profit	Businesses with profit	Businesses with and without profit	Businesses with profit	Businesses with and without profit	Businesses with profit
	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent	1,000 dollars	Percent
1970	54,297,447	22.6	42,020,554	22.6	52,181,027	22.6	35,113,766	32.7
1971	55,820,604	24.6	42,087,522	24.6	54,014,519	24.6	35,827,693	33.7
1972	66,233,705	20.8	52,443,695	20.8	61,869,498	20.8	43,664,837	29.4
1973	92,833,093	19.2	74,963,084	19.2	83,318,772	19.2	60,023,768	28.0
1974	92,978,280	25.2	69,549,815	25.2	86,489,100	25.2	53,093,905	38.6
1975	98,020,428	23.0	75,477,728	23.0	93,576,351	23.0	62,228,761	33.5
1976	108,620,694	25.6	80,828,679	25.6	104,369,630	25.6	67,360,107	35.5
1977	107,382,804	29.2	76,037,665	29.2	106,947,406	29.2	65,029,360	39.2
1978	128,593,402	24.9	96,525,384	24.9	124,067,944	24.9	81,899,992	34.0

^{1/} Includes depreciation.

Additional analysis of more detailed IRS farm tax-loss data is highly recommended.

A similar methodology is used to estimate USDA expenses related to tax-loss farming for farms with sales of agricultural commodities of \$5,000 or less. Expenses related to tax-loss farming must be removed from USDA total production expenses in table 12 because all expenses related to tax-loss farming have been removed from IRS total deductions.

Cash Rent

Rent paid in the USDA farm production expense series is much more broadly defined than IRS paid rent. IRS rent in the Schedule F is cash rent only. Both cash rent and crop share rent paid to landlords are included in the USDA net rent series. Net rent is estimated by USDA as gross cash and share rent less farm production expenses paid by landlords. USDA cash receipts include the value of agricultural commodities paid as share rent by operators to landlords. USDA share rent is added to IRS total deductions to reconcile IRS total deductions to USDA total farm production expenses.

Interest Paid

The two most rapidly rising farm expenses, interest paid and depreciation, have the most nebulous economic concepts and the least supporting empirical data. Interest paid data collected in the annual Farm Production Expenditure Survey (FPES) were 78 percent of the USDA farm income series; IRS interest paid equaled 83 percent of USDA's in 1978 (table 14). The difference between the USDA farm income interest paid series and the FPES data is increasing rapidly for years after 1974. IRS data may confirm statistically the appropriate amount of interest paid.

Debt and interest paid data collected in USDA surveys and the Census of Agriculture have tended to equal about two-thirds of published USDA data. Farm debt outstanding in the USDA Balance Sheet of the Farm Sector series and interest paid in the USDA net farm income series are estimated based on data from the Farm Credit Administration (FCA), Farmers Home Administration (FmHA), and other institutional reports. Analysts have assumed that the resulting difference between USDA published data and survey data was traced to the sensitivity of financially related questions, causing farmers to underreport farm debt outstanding and interest paid. However, IRS data indicate this assumption may be false.

Farmers may be separating farm interest paid from nonfarm interest paid in response to the FPES and IRS, rather than underreporting farm interest paid. If this is true, farm interest paid in the USDA farm income account was overstated by 40 percent (\$5.4 billion) in 1981, and returns to operators were understated 30 percent. To reconcile IRS total deductions to USDA farm production expenses, IRS total deductions in table 12 were increased by the amount USDA interest paid exceeded IRS interest paid.

Table 14--USDA, FPES, and IRS farm interest paid, 1971-81

Year	:	:	:	:
	:	U.S.	:	Farm
	:	Department	:	Production
	:	of	:	Expenditure
	:	Agriculture ^{2/}	:	Survey ^{2/}
	:		:	Internal Revenue Service ^{3/}
	:		:	
	:	<u>Million dollars</u>		
	:			
1971	:	3,372	2,531	2,815
1972	:	3,700	3,275	3,118
1973	:	4,474	3,655	3,833
1974	:	5,509	4,019	4,421
	:			
1975	:	5,973	4,755	5,196
1976	:	6,703	4,688	6,043
1977	:	7,951	6,033	6,511
1978	:	9,531	7,477	7,942
	:			
1979	:	12,150	9,212	9,914
1980	:	15,140	10,914	^{4/} 12,513
1981	:	18,967	13,549	N/A
	:			

N/A = not available.

^{1/} The USDA interest paid series is estimated from various reports issued by the Farm Credit Administration, Farmers Home Administration, and others. The USDA interest paid series is used directly in the USDA total farm production expense series.

^{2/} Excludes farm households. Excludes farms with sales of less than \$1,000 of agricultural commodities. Includes landlords.

^{3/} Includes farms with sales of less than \$1,000 of agricultural commodities. Includes landlords.

^{4/} Estimated.

Depreciation

USDA depreciation is based on replacement value, and IRS depreciation is based on book value. To reconcile IRS total deductions to USDA total farm production expenses, IRS total deductions were increased in table 12 by the amount USDA replacement value depreciation charges exceeded IRS book value charges.

In a study of internal farm capital financing, internal funds from depreciation exceeded total farm borrowing by 12 percent from 1960 to 1974. The estimated book value depreciation in the capital finance account is the USDA replacement value depreciation series converted to book value. Both depreciation series are based on identical capital expenditure data, assumed asset lives, and the declining balance depreciation method used in estimating USDA total net farm income. The rapid increase

of IRS depreciation compared with the estimated book value depreciation in table 1 indicates that the technique of converting replacement value economic depreciation to derive estimates of book value depreciation is not valid. A new methodology must be developed to estimate book value depreciation in the capital finance account, perhaps incorporating more directly the magnitude and trends of IRS depreciation data.

Farmers are using more rapid depreciation methods and shorter asset lives than the current USDA methodology to estimate economic depreciation value at replacement cost. Book value depreciation in the capital finance account (table 1) equaled 68 percent of USDA replacement value depreciation from 1960 to 1974. However, IRS book value depreciation equaled 90 percent of USDA replacement value depreciation from 1970 to 1978. Shorter asset lives and faster depreciation methods used by farmers offset the effect of valuing USDA depreciation at replacement cost (table 12).

Livestock Purchases

In-State livestock purchases data included in IRS livestock purchases data are omitted from USDA livestock purchases data. The value of in-State livestock purchases were subtracted from IRS total deductions in table 12 to reconcile IRS total deductions to USDA total farm production expenses.

Livestock purchases reported by IRS sole proprietorships included intrastate and interstate purchases. IRS partnership and corporation livestock purchase data were not available. Based on the Census of Agriculture, sole proprietorships purchased 52.3 and 47.3 percent of all livestock in 1974 and 1978. IRS livestock purchases for all businesses including sole proprietorships, partnerships, and corporations were estimated in table 12 based on IRS sole proprietorship data adjusted upward for the percentage of livestock purchases by partnerships and corporations.

IRS sole proprietorship livestock purchase data reported in the Schedule F includes livestock and other items. The composition and magnitude of the entry of other items in the Schedule F is unknown. Therefore, the statistical reliability of the IRS livestock purchases including inshipments estimates in table 12 cannot be validated.

Taxes

USDA and IRS taxes paid include real estate property taxes and other nonreal estate property taxes. IRS taxes paid also include social security to hired labor. Therefore, IRS taxes paid should exceed USDA property taxes paid (table 15). Instead, USDA and IRS taxes paid are about equal. USDA may be picking up nonfarm-related property taxes in their data sources and methodologies to estimate farm property taxes paid.

Cost of Labor

Labor costs and taxes are probably the two most difficult IRS and USDA items to compare. USDA labor costs consist of wages

Table 15--IRS and USDA farm production expenditures, 1970-78

Item	1970	1971	1972	1973	1974	1975	1976	1977	1978
<u>Million dollars</u>									
Property taxes:									
IRS 1/									
Sole proprietorships	1,454	1,617	1,670	1,830	1,807	2,011	2,201	2,227	2,394
Partnerships	189	194	196	242	240	267	301	308	310
Corporations	196	208	228	328	390	476	566	631	679
All farm returns	1,839	2,019	2,094	2,400	2,437	2,754	3,068	3,166	3,383
USDA									
Taxes on farm property	2,386	2,488	2,593	2,659	2,853	2,956	3,237	3,394	3,339
Cost of labor:									
IRS 1/									
Sole proprietorships	2,513	2,455	2,640	3,084	3,331	4,045	4,043	3,862	3,972
Partnerships	564	566	508	701	728	776	838	835	933
Corporations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All farm returns	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
USDA									
Hired wages 1/	4,340	4,372	4,557	5,167	6,075	6,586	7,510	7,953	8,348
Livestock purchased:									
IRS 2/									
Sole proprietorships	6,811	7,143	9,521	11,444	8,520	7,568	9,027	11,153	11,792
Partnerships	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Corporations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All farm returns	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
USDA									
Livestock purchased 3/	4,324	5,123	6,668	8,065	5,131	4,950	5,871	7,033	10,148
Rent:									
IRS 4/									
Sole proprietorships	1,255	1,437	1,584	2,016	2,000	2,285	2,729	2,579	3,540
Partnerships	269	291	317	439	447	449	484	549	781
Corporations	224	172	195	320	400	561	662	649	748
All farm returns	1,748	1,900	7,096	2,775	2,847	3,295	3,875	3,777	5,069
USDA									
Net rent 5/	2,403	2,427	3,824	6,248	5,641	5,145	4,818	5,169	5,483
Interest:									
IRS									
Sole proprietorships	2,035	2,207	2,459	2,915	3,256	3,865	4,595	4,777	5,872
Partnerships	280	321	353	456	530	628	695	770	976
Corporations	279	287	306	462	635	703	753	964	1,094
All farm returns	2,593	2,815	3,118	3,833	4,421	5,196	6,043	6,511	7,942
USDA 6/									
Nonreal estate debt	1,618	1,646	1,767	2,211	2,729	2,956	3,182	3,971	4,902
Real estate debt	1,764	1,905	2,132	2,495	3,044	3,421	3,852	4,365	5,120
Total	3,382	3,551	3,899	4,706	5,773	6,377	7,034	8,336	10,022
Depreciation:									
IRS									
Sole proprietorships	4,598	4,824	5,290	6,473	7,189	7,857	8,845	8,758	10,208
Partnerships	495	510	546	671	806	910	1,010	1,036	1,238
corporations	370	368	413	597	741	858	978	1,164	1,331
All farm returns	5,463	5,702	6,250	7,741	8,735	9,625	10,833	10,958	12,776
Capital finance account	4,783	5,484	6,076	N/A	N/A	N/A	N/A	N/A	N/A

N/A = not available.

1/ Includes social security taxes paid to employees by farm operators. 2/ Include in-State purchases. 3/ Excludes in-State purchases. 4/ Gross cash rent only. Share rent is not reported as a farm expense to determine taxable income.

5/ Gross share rent plus gross cash rent less farm production expenses paid by landlords. 6/ Includes households.

paid, contract labor, and perquisites including social security taxes paid and life and health insurance. In order to estimate total labor costs, USDA collects data on all four components within a single labor section when surveying farmers. In contrast, farmers can report all four items separately to IRS. Wages paid could be reported as labor hired, contract labor as other expenses, social security payments as taxes paid, and life and health insurance as insurance. In addition, compensation of farm managers, senior managing partners of a partnership, and corporate officers could also be reported separately from wages paid. The separate reporting of these items may explain why IRS cost of labor could appear lower than USDA.

Another reason explaining the difference between IRS and USDA labor costs is that wages paid for the construction of improvements considered capital expenditures cannot be charged to IRS current expenses. These wages must be capitalized and depreciated. USDA estimates of costs include wages for the construction of capital improvements.

Land Improvements

Expenditures for land improvements such as dams, ponds, terraces, windbreaks, land clearing, and soil conservation may be charged as a current expense under IRS regulations up to 25 percent of gross farm income in a year. Land expenditures beyond 25 percent of gross farm income can be charged to current expense in the following year when the 25-percent limitation again applies.

Land improvements are charged to capital expenditures by USDA to estimate net farm income, but no depreciation is charged. Land improvements are assumed not to depreciate in the USDA farm economic accounts.

Summary of IRS Total Deductions

No detailed IRS farm expense data existed for partnerships and corporations, which, based on the 1978 Census of Agriculture, accounted for 37 percent of total USDA expenses. Although detailed IRS expense information is available for sole proprietorships via the Schedule F, substantial differences exist between USDA and IRS economic definitions. For these reasons, IRS data are probably inadequate as a substitute for any portion of the existing farm sector data system. Instead, IRS expense data provide the potential to fill existing data gaps in the current farm data system, primarily including interest paid and depreciation.

CONCLUSIONS

Several statistical adjustments were required in the analysis of IRS and USDA business receipts and expense data because only highly aggregated IRS data were available. In addition, partnerships and corporations were sampled by IRS only if farming was the largest source of income, but no minimum sales were required. Any business unit, even if its primary business activity was nonfarming, was sampled by USDA and the Census of Agriculture if the agricultural sales were at least \$1,000. Extreme differences in definitions often occurred between IRS and USDA data series. For these reasons, no

conclusion may be drawn based on this analysis with absolute certainty. Perhaps the safest conclusion is that the highly aggregated nature of IRS farm partnership and corporate data limits the capability of IRS farm data to be directly used for USDA farm income estimation.

A significant contribution of IRS data is monitoring those structural and financial farm business decisions made in response to the tax environment. Examples of these decisions include the 1972 depreciation increase, the prepaying of 1974 inputs in calendar year 1973 to lower income taxes, the low profit margins of farm corporations, the rapid rates of book value depreciation, and tax-loss farming. The USDA farm data system does not have the capacity to monitor these types of business decisions.

Despite its highly aggregated nature, IRS data can be used to improve and expand the USDA farm economic accounts and to monitor the statistical validity of the accounts and their supporting data. The increasing difference between IRS and USDA receipts and interest paid data and the reasons for the difference is of special concern. IRS business receipt data are higher and IRS interest paid data are lower than USDA estimates, indicating that the net farm income series estimated by USDA is perhaps underestimated.

Several other potential uses of IRS data exist besides monitoring the conceptual and statistical validity of the USDA farm sector economic accounts. USDA net farm income is on a before-tax basis, thus preventing the analysis of tax program benefits and burdens. IRS data will permit development of the USDA net farm income series on an after-tax basis. IRS depreciation data will permit the development of the capital finance account. Aggregate IRS data are inadequate to estimate directly USDA farm income, but they do provide additional annual data for USDA farm income distributions by type of farm and business organization. Tax-loss farming can be analyzed only with IRS data. IRS data, therefore, have the potential to improve greatly farm income estimation, distribution, and analysis.

IRS data provide an additional monitor of farmers' well-being. Farm ownership, financing, and the distribution of farm income shares are becoming increasingly complex. No single data source and no single income concept can monitor these increasingly complex relationships. Monitoring and understanding IRS receipt, expense, tax, and depreciation flows provides additional insights into the complex operation and structure of the farming sector that are not provided by current USDA income measures.

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A Statistical Analysis of the USDA Farm Income Concepts and Their Supporting Data

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Increasing specialization in farming and the continuing shift of traditional farm functions to the farm input and food marketing sectors have accentuated the statistical problems of farm income measurement.^{1/} This paper reviews certain farm income concepts and data gaps that may cause a misinterpretation and, perhaps, understatement of the income benefits received by farm operator families from farming. The analysis examines current USDA definitions of farm income and farm-related income, measurement accuracy of farm interest paid, and alternate measures of farm income based upon the degree of dependency upon farm income for the farm family's total income.

PROBLEMS IN MEASURING FARM INCOME

USDA farm income concepts are based on the concept of four types of farm income received by four types of recipients: farm profit by operators (returns to operators), rent by landlords, wages by labor, and interest by lenders. However, the USDA farm income concept does not recognize that self-employed farmers may receive more than one type of farm income. Farm profit can also be distributed to farm family members as wages, rent, farmland sales, or interest on loans. In fact, certain IRS regulations permit these distributions to cut back income taxes by reducing

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^{1/} In addition to other studies prepared by its staff, ERS has conducted three major evaluations of the farm sector accounts within recent years, Farm Income and Capital Accounting--Findings and Recommendations of a 1972 Task Force, Proceedings of Workshop on Farm Sector Financial Accounts, 1977, and Economic Information for the U.S. Farm Sector: A Revised Format(1,6,2,3). The latter report was completed in 1980, but research on farm sector accounts and their data continues. (Underlined numbers in parentheses cite sources listed in the References section at the end of this article).

farm profit. These distributions are also likely to arise when transferring the farm to the operator's children. For example, if the farmer pays a spouse for services rendered on the farm, the payments may reduce the amount of farm income on which the self-employment tax must be paid. Such payments may allow the spouse to make deductible contributions to an IRA or a Keogh retirement plan that would not be permitted if the spouse reported no income. However, tax accountants and lawyers have long recognized that the greatest tax-saving benefits are realized by splitting income with children or grandchildren (5). The usual techniques are payments for the services of a child in the business and gifts of income-producing properties to the child.

Farm income can also be reduced by rearranging expenses. For example, personal life and health insurance premiums are not tax deductible for individuals but can be tax deductible for farm family employees in a corporation if certain conditions are met.

Current USDA farm income concepts can be divided into three categories: (1) income earned by operators from agricultural production (returns to operators), (2) income earned by operators from the farm (USDA's definition of income from farm sources, which equals returns to operators plus net rent received by farm operators and the imputed rental value of operator dwellings), and (3) total income of the farm operator family (income earned by operators from farm sources plus off-farm income earned by the farm operator family). The three separate farm income measures were developed and published in 1980 by USDA to separate the concepts of "income from farms" and "income of farm operators." The two older USDA farm income series, total net farm income of operators including and excluding net farm inventory change, combined both income concepts within a single farm income measure but could not clearly distinguish between economic activities of the farm production unit and the farm household (1).

The new USDA farm income series, returns to operators, measures the income earned from agricultural production. The USDA income measure, total income of the farm operator family, remains unchanged and measures the income of farm operator families from farm and nonfarm sources. The second new USDA farm income measure, income earned from farm sources, recognizes the existence of certain farm-related income activities such as net rent received by farm operators and the imputed rental value of operators' dwellings that are neither income from farming production nor nonfarm income totally unrelated to the farm business unit owned by the farm operator. Suggestions and criticisms contained in this paper, although affecting all three USDA income measures, are primarily directed at USDA's income from farm sources series.

Returns to Operators

Farming is defined as the production of crops and livestock. Defining farm sector economic activities is very straightforward for the production and sale of most agricultural commodities. However, offsetting receipt and expense entries are required for

many agricultural commodities to estimate returns to operators. For example, corn produced by one farmer and sold to another farmer for feed is credited to farm sector income as cash receipts. Corn purchased for feed is also appropriately debited to total farm sector production expenses. This example is straightforward without any serious conceptual conflict in defining and measuring farm income or determining the need for offsetting income and expense entries in the USDA farm income accounts.

Income from Farm Sources

Other farm-related economic activities occurring on the farm or using farm property owned by the farm operator are more difficult to classify as farm income, income from farm sources, or income from nonfarm sources. Under current procedures, for example, customwork expenses (combining, harvesting, and baling) are charged to farm production expenses, and customwork income is credited to gross farm income to estimate returns to operators. In 1981, farm production expenses included \$2.9 billion of customwork expenses, and gross farm income included \$1.8 billion of customwork income earned by farm operators. To exclude customwork income earned by farm operators from gross farm income would reduce returns to operators by \$1.8 billion. Yet, customwork income equaled 10 percent of 1981 returns to operators.

Farm production expenses included more than \$7 billion of farm rent paid to all landlords in 1981, but \$879 million in rent paid to operator landlords was also credited as income earned from farm sources. Again, without this adjustment, USDA's income from farm sources series would be \$879 million lower, because rent paid to all landlords, including operator landlords, was fully charged to farm production expenses to estimate the returns to operators series.

However, since the methodology of offsetting income entries is not followed for all farm-related economic activities, USDA's income from farm sources series is probably understated (table 1). Income earned from such farm-related activities as farm labor, farm interest received, farmland sales, and farm machinery sales are not included in the USDA income from farm sources series. Farm labor income and farm interest income earned by farm operators are instead included in off-farm income.

Wages

All wages paid to operators' family members for working on their own farm were fully charged to farm production expenses but are not credited to income from farm sources. Depending upon the interpretation adopted by the enumerated operator, wages-paid data collected in the Farm Production Expenditure Survey and the Census of Agriculture may also include the wages paid to the operator. The annual Farm Production Expenditure Survey asks operators to "include payments to family workers" as farm wages paid. The 1978 Census of Agriculture requested operators to report all expenditures "paid by you." The responses of the senior partners of farm partnerships and the managers of farm corporations to this question are difficult to evaluate.

Table 1--Measurement of farm-related income and expenses in the USDA
farm income and expense accounts 1/

Item	:	:	:	Where measured by USDA?			:
				Income	Off-farm	Total income	
		Included	Measured	Returns to	Income	income of	Total income
		in USDA	by USDA	operators <u>2/</u>	from farm	farm operator	of farm
		farm	as income		sources <u>3/</u>	families <u>4/</u>	operator
		expenses?	of farmers?				families <u>5/</u>
	:	:	:	:	:	:	:
Income from farm wages:	:						
Wages for working on own	:						
farm paid to--	:						
Operators <u>6/</u>	:	--	--	N/A	N/A	--	--
Family members	:	Yes	Yes	N/A	N/A	X	X
	:						
Wages for working on another	:						
farm paid to--	:						
Operators <u>7/</u>	:	Yes	Yes	N/A	N/A	X	X
Family members	:	Yes	Yes	N/A	N/A	X	X
	:						
Farm interest received:	:						
Farm cash on hand	:	N/A	Yes	N/A	N/A	X	X
Debt owed to farmers by	:						
other farmers	:	Yes	Yes	N/A	N/A	X	X
	:						
Sales of capital assets:	:						
Farm land	:	<u>8/</u> Yes	No	N/A	N/A	No	No
Farm vehicles and machinery	:	<u>9/</u> Yes	No	N/A	N/A	No	No
	:						
Income of retired farmers:	:						
Farm interest	:	Yes	No				
Rent <u>10/</u>	:	Yes	No	N/A	N/A	No	No
Sales of farmland	:	<u>8/</u> Yes	No	N/A	N/A	No	No
Sales of farm vehicles and	:						
machinery	:	<u>9/</u> Yes	No	N/A	N/A	No	No

Continued--

Table 1--Measurement of farm related-income and expenses in the USDA
farm income and expense accounts--continued

Item	Impact of proposed income shifts			
	Returns to operator <u>2/</u>	Income from farm sources <u>3/</u>	Off-farm income of farm operator families <u>4/</u>	Total income of farm operator families <u>5/</u>
Income from farm wages:				
Wages for working on own farm paid to--				
Operators <u>6/</u>	None	Increase	Decrease	None
Family members	None	Increase	Decrease	None
Wages for working on another farm paid to--				
Operators <u>7/</u>	None	Increase	Decrease	None
Family members	None	Increase	Decrease	None
Farm interest received:				
Farm cash on hand	None	Increase	Decrease	None
Debt owed to farmers by other farmers	None	Increase	Decrease	None
Sales of capital assets:				
Farmland	None	Increase	None	Increase
Farm vehicles and machinery	None	Increase	None	Increase
Income of retired farmers:				
Farm interest	None	None	None	None
Rent <u>10/</u>	None	None	None	None
Sales of farmland	None	None	None	None
Sales of farm vehicles and machinery	None	None	None	None

-- = unknown.

X = included.

N/A = not applicable.

1/ For illustrative purposes only. 2/ Income earned by operators from agricultural production. 3/ Income earned by operators from farm sources includes returns to operators, net rent received by farm operators, and the imputed rental value of the operators dwellings. 4/ Income earned off the farm by farm operators and their families from wages, salaries, interest, dividends, royalties, social security, pensions, nonfarm business, and nonfarm professional income.

5/ Total income of the farm operator family equals income earned by the farm operator from farm sources plus off-farm income earned by the farm operator family. 6/ Includes wages for farm labor and wages or fees paid to senior partners of a farm partnership or the senior member-stockholder operator of a farm corporation for professional farm management services.

7/ Includes wages for farm labor and wages or fees paid for professional farm management services. 8/ Farmland purchases do not enter directly as an expense in the USDA farm expense account. The cost of farmland purchases enter indirectly into farm expenses as interest paid on loans borrowed to finance farmland purchases. 9/ Depreciation is calculated on all purchases of new and used machinery purchased from dealers and farmers. Machinery purchased from dealers is net of trade-ins. However, data are not collected separately for the value of farm machinery sold by farmers to other farmers. 10/ Component of net rent paid to nonoperator landlords. Nonoperator landlords can include retired farmers.

Farm wages earned by farm operators and their families for working on their own farm are included in off-farm income and not in USDA's income from farm sources series. Thus, a downward bias in the series likely occurs. The size of this bias is unknown because no data are available. These wages may be significant, since farms operated under partnership and corporation arrangements account for about 36 percent of gross farm income. Family members may also receive farm wages for working on their farm operated as a sole proprietorship.

USDA net farm income of sole proprietorships in 1978 was \$8,663 per farm, compared with \$18,127 per partnership farm. Based on 1978 IRS data, approximately three partners per farm partnership share farm income. Subchapter S and Subchapter C corporations can have more than three persons sharing farm income. USDA net farm income in 1978 totaled \$56,826 per Subchapter S corporation and \$324,234 per Subchapter C corporation.

A more difficult item to classify as farm income, income from farm-related sources, or off-farm income is farm wage income received by farm operators and their families from working on another farm. Farm operators and their families reported \$1.1 billion of farm wage income (4.1 percent of returns to operators) earned by working on another farm in 1979 based on the Agriculture Census of Farm Finance (table 2). Farm wage income earned by operators and their families from working on their own farm represents a form of distributing the family's farm profit. Farm wage income earned by working on another farm does not represent a form of distributing the family's farm profit.

Farm Interest Received

Farm interest received for loans made by operators to other operators is not credited to gross farm income, but all farm interest paid is fully charged to farm production expenses. This situation could lead to understating income earned by farm operators from farm sources. Based on the 1979 Agriculture Census of Farm Finance, 5.7 percent of total farm debt was owed by farm operators to other farm operators.^{2/} Applying this percentage against the \$12.2-billion interest paid on total farm debt resulted in an estimate of \$695 million of farm interest paid by farm operators to other farm operators in 1979, or 2.6 percent of returns to operators (table 2). Interest received on farm debt by operators from other operators may become increasingly significant in the future if farm operators increase their participation in holding farm debt for such purposes as farmland sales.

^{2/} Money owed to operators of \$5.8 billion equals 5.7 percent of total operator debt outstanding of \$100.9 billion in the 1979 Agriculture Census of Farm Finance. Debt owed to individuals by operators or farmland purchased totaled \$15.3 billion, or 15.1 percent of total operator debt outstanding. Individuals include current farm operators, retired farmers, landlords, and other individuals.

Table 2--Analysis of the differences created by shifts
in income definitions on the USDA farm income measures, 1979 1/

Item	Returns to operators	Income from farm sources	Off-farm income of farm operator families	Total income of farm operator families
<u>Million dollars</u>				
Total income, all farms including farms with sales of less than \$5,000	26,719	32,347	33,782	66,129
Wages paid to operators and family members for working on their own farm	--	N/A	N/A	N/A
Wages paid to operators and family members for working on another farm	--	1,089	-1,089	0
Farm interest received from--				
Farm cash on hand	--	418	-418	0
Farm debt owed to farmers by other farmers	--	695	-695	0
Sales of farmland for--				
Farm purposes	--	3,917	0	3,917
Nonfarm purposes	--	1,125	0	1,125
Farm machinery sales	--	N/A	0	N/A
Interest paid adjustment <u>2/</u>	2,938	2,938	--	2,938
Total income adjustments	2,938	10,182	-2,202	7,980
Adjusted total income, all farms including farms with sales of less than \$5,000	29,657	42,529	31,580	74,109
<u>Percent</u>				
Difference in income caused by changes in farm income definitions	11.0	31.4	-6.5	12.1

-- = not applicable.

N/A = not available.

1/ For illustrative purpose only. Further analysis and data collection is recommended.

2/ Returns to operators are increased by the net amount USDA interest paid exceeds FPES interest paid in table 55.

In addition to interest received on farm debt, interest is also received on financial cash assets held by farm operators in support of the farming operation, family living, and nonfarm business. To better separate household and nonfarm business activities from farming activities, interest received on financial assets held by operators in support of their farming operations should probably be accounted for as income from farm sources rather than as off-farm income. However, it is statistically difficult to separate financial assets owned by farm operators held for farming purposes from financial assets held for nonfarming purposes such as family living and nonfarm business. As with farm wages earned working on another farm, interest received on financial assets is more difficult to classify as farm income, income earned from farm-related sources, or off-farm income.

A major reason for declining farm income in recent years has been rising interest costs, fueled by increasing interest rates paid on farm debt. However, USDA's income from farm sources series does not recognize the benefit received by rising interest rates, increased interest earned on farm financial assets. Farmers may hold substantial farm financial assets, but not all farmers benefit equally from rising interest rates on their financial assets, especially those farmers who have substantial farm debt.

All time deposits on hand January 1, 1979, were estimated by USDA at \$8.4 billion. Assuming an interest rate paid on time deposits of 5 percent, about \$418-million interest income earned on all time deposits was excluded from farm income in 1979, or 1.6 percent of returns to operators. However, USDA estimates of financial assets on hand are understated for two reasons. First, current data sources and methodologies do not permit estimation of negotiable order of withdrawal (NOW) accounts that receive interest and transfer funds to the checking account as needed. Much of the \$5.3-billion demand deposits held by farm operators January 1, 1979, as estimated by USDA are probably NOW accounts. Second, certificates of deposit, saving certificates, and money market funds held by farm operators in support of the farming operation are not included in the balance sheet of the farming sector because no data are available.

To gain a feel for the potential magnitude of farm financial assets on hand, net debt outstanding increased by \$21 billion, or only 17 percent of the \$126 billion spent for land purchases, machinery purchases, and current operating expenses in 1979, implying that 83 percent of 1979 expenditures was financed with \$105-billion cash on hand. (The \$105-billion financial assets also equaled 83 percent of the \$127 billion total farm debt outstanding as of January 1, 1979.) However, farm financial cash assets on hand and the interest received are probably not as large as implied by the 17-percent net increase in 1979 farm debt for three reasons. First, farm loans borrowed and repaid during the year are a substitute for financial assets on hand. Farm loans borrowed and repaid during the year are not included in the net annual increase in debt outstanding. Second, farm

financial assets used to purchase inputs do not receive interest during the crop or livestock production period. Third, cash on hand can be used more than once during the year for short agricultural production cycles of less than a year, such as buying, feeding, and selling broilers or pigs.

Farmland Sales

Other farm income definitions and data gaps concerning farmland sales and farm machinery sales also cause USDA farm income to be understated. Income received by farm operator families from the sale of farmland is not included in either farm income or off-farm income. Of the \$8 billion of farmland purchased by farm operators in 1979, farm operators sold \$3.9 billion (table 3). The methodology to account properly for farmland sales and purchases among farm operators, a new area of sector economic accounting that will require further analysis, is not as straightforward as custom hire or rent.^{3/} Purchases and sales of farm real estate data by operators and landlords were not previously available until the 1979 Agriculture Census of Farm Finance. Whatever accounting technique is adopted, some type of offsetting income from land sales and/or interest received from land sales entry (or account) is required to estimate farm income, because farm production expenses are fully charged for the interest paid on farm real estate purchased. Sales of farmland of \$3.9 billion by farmers to other farmers equaled 14.7 percent of returns to operators in 1979 (table 2).

Farm operators do not sell farmland only to other farm operators. In the 1979 Agriculture Census of Farm Finance, farm operators reported selling \$1.1 billion of farmland to nonfarm sectors (table 3). Under present concepts, sales of farmland to nonfarm sectors are not credited to either farm or off-farm income. Sales of farmland to nonfarm sectors of \$1.1 billion equaled 4.1 percent of returns to operators in 1979 (table 2).

Farm machinery sales

Under the current methodology for collecting farm machinery and motor vehicle expenditure data, farmers are asked to report their purchases of vehicles and machinery net of trade-ins. Data on outright sales by farmers of farm machinery and vehicles not involved in a trade-in are not collected and included in the income from farm sources series.

Depreciation on all farm vehicles and machinery purchased by farmers is fully charged to farm production expenses. Farm sector depreciation charges are overstated because farm sector purchases of motor vehicles and machinery are overstated by the

^{3/} The accounting treatment of land sales will necessarily differ under the application of national income and product accounting procedures for income analysis and the application of flow-of-funds accounting for financial analysis. For example, how are principal payments to be accounted for? A distribution of farmers identifying and highlighting the income and financial conditions of farmers selling land and farmers purchasing land also needs to be developed.

Table 3--Farm sector real estate purchases and sales, 1979

Item	Operators	Landlords	Other <u>1/</u>	Total
		<u>Million dollars</u>		
Farm real estate purchased	7,954	805	--	8,759
Farm real estate sold:				
For farm purposes	3,917	2,039	<u>2/</u> 2,803	8,759
For nonfarm purposes	1,125	987	N/A	2,112
Total farm real estate sold	5,042	3,026	2,803	10,871

-- = not applicable.

N/A = not available.

1/ Discontinuing and retiring farmers, foreclosures, and estate sales.

2/ Total farm real estate purchased less farm real estate sold to farm operators by farm operators and landlords.

Source: 1979 Agriculture Census of Farm Finance.

amount of outright sales. As with some of the previously discussed concepts, no data are available to assess the magnitude and importance of outright sales of farm vehicles and machinery by farmers.

FARM EXPENSE CONCEPTS AND DATA GAPS

The preceding analysis has focused on measuring farm-related income sources not presently accounted for either as farm or nonfarm income. Current methodologies to estimate interest paid and property taxes also introduce a negative bias in USDA income measures.

Farm Interest Paid

Historically, debt and interest paid data collected in USDA-conducted farm surveys and the Census of Agriculture have tended to equal about two-thirds of published USDA data. For example, interest paid data in the 1981 Farm Production Expenditures Survey equals \$13.5 billion, compared with the interest paid estimate of nearly \$19 billion contained in the USDA farm expenses series, a difference of \$5.4 billion, or 40 percent (table 4). The USDA interest paid series is estimated from various reports issued by the FCA, FmHA, the Life Insurance Institute, Federal Reserve System, and others. Interest paid to commercial banks, merchants, dealers, and individuals is based on benchmark data collected in the Agriculture Census of Farm Finance (4). Analysts have assumed that the resulting difference between interest paid data reported by institutional lenders and Farm Production Expenditure Survey (FPES) data was due to the sensitivity of financially related questions, causing farmers to underreport farm debt and interest paid. However, IRS farm data indicate this assumption may be false and that

Table 4--USDA, FPES, and IRS farm interest paid

Year	U.S. Department of Agriculture <u>1/</u> <u>2/</u>	Farm Production Expenditure Survey <u>2/</u>	Internal Revenue Service <u>3/</u>
<u>Million dollars</u>			
1971	3,372	2,531	2,815
1972	3,700	3,275	3,118
1973	4,474	3,655	3,833
1974	5,509	4,019	4,421
1975	5,973	4,755	5,196
1976	6,703	4,688	6,043
1977	7,951	6,033	6,511
1978	9,531	7,477	7,942
1979	12,150	9,212	9,514
1980	15,140	10,914	<u>4/</u> 12,513
1981	18,967	13,549	N/A

N/A = Not available.

1/ The USDA interest-paid series is estimated from various reports issued by the FCA, FmHA, and others. The USDA interest-paid series is used directly in the USDA total farm production expenses series.

2/ Excludes farm households. Excludes farms with sales of less than \$1,000 of agricultural commodities. Includes landlords.

3/ Includes farms with sales of less than \$1,000 of agricultural commodities. Includes landlords.

4/ Estimated.

the FPES interest paid data are not understated (see "Comparing IRS Farm Data Trends with the USDA Measures of Farm Income" in this report). Based on FPES data, farm interest paid in the USDA net farm income account was overstated by \$2.9 billion in 1979, and returns to operators were understated by 11 percent (table 2). The difference between the USDA and FPES interest paid series widened to \$5.4 billion in 1981, perhaps causing returns to operators to be understated by as much as 30 percent.

Three areas may explain the discrepancy among the interest paid estimated by USDA from lender reports, IRS, and the FPES. First, portions of loans obtained from the FCA may actually be for nonfarm purposes. Second, commercial banks extend to farmers lines of credit which may be used for

nonfarm as well as farm purposes. Third, loans granted by merchants, dealers, and individuals may be at concessionary rates. Thus, farmers may be accurately separating farm interest paid from nonfarm interest paid in response to the FPES, and also for IRS, rather than underreporting farm debt outstanding and farm interest paid as analysts have assumed in the past. More detailed debt and interest paid data need to be collected to assess accurately current estimates of USDA farm interest paid, including more frequent collection of interest paid by lender data and borrowing by purpose data.

Property taxes

All property taxes paid on farm real estate are charged to farm production expenses, although the value of farmland is heavily influenced by nonfarm purposes including mineral and royalty income and potential urban or industrial development. For example, the value of farmland in New Jersey in 1982 was \$3,118 per acre, compared with \$1,802 for Iowa. Distinguishing the value of farmland between its agricultural value and nonagricultural value is statistically difficult. However, the conceptual issue remains. Should only those property taxes attributable to the actual agricultural value of farmland be included in farm production expenses? However, taxation of farmland at its farm value may now be occurring. Many States now have special use value legislation which taxes farmland at its value for farming purposes only.

DEPENDENCY ON FARM INCOME

Dependency on farm income, as indicated by the primary occupation of the person operating the farm, is not a criterion used by USDA in measuring farm income. Based on 1978 Census of Agriculture data, 46 percent of all farmers did not report farming as their primary occupation (table 5). Returns to operators will increase by about 17 percent in 1981 if primary occupation becomes a criterion in defining and measuring farm income. Not much concern has been expressed in past farm income analysis (and therefore no data collected) about the dependency of farm landlords on farm rent income as their primary income source.

Primary Occupation

Small farms appear to be mostly rural residences for retirees and persons not primarily engaged in farming. Only 26 percent of farmers with sales of less than \$5,000 report farming as their primary occupation. In addition, based on data reported in the 1978 Census of Agriculture for farms with sales of less than \$5,000, 46 percent of farmers reporting farming as their primary occupation are at least 65 years old (table 5). Thus, only about 14 percent of farmers under 65 years with sales of less than \$5,000 are primarily engaged in farming.

The aggregate measures of farm sector well-being are distorted by including the negative returns to operators of small noncommercial farms with sales of no more than \$5,000 in the USDA income statistics for all farms. For example, by excluding the negative \$3 billion in farm returns to operators of small noncommercial farms, returns to operators

Table 5--Summary of age and principal occupation of operator, by value of sales class, 1978

Value of agricultural products sold	Farming			Other occupations			Total farming and nonfarming
	Under 65	65 years and older	Total farming	Under 65	65 years and older	Total nonfarming	
Number of farmers:							
\$500,000 or more	14,585	1,364	15,949	1,816	211	2,027	17,976
\$200,000 to \$499,999	53,835	3,626	57,461	4,826	493	5,319	62,780
\$100,000 to \$199,999	122,977	7,574	130,551	10,351	1,024	11,375	141,926
\$40,000 to \$99,999	300,363	24,745	325,108	35,131	3,144	38,275	363,383
\$20,000 to \$39,999	197,629	34,826	232,455	67,837	5,820	73,657	306,112
\$10,000 to \$19,999	137,200	47,392	184,592	114,490	10,512	125,002	309,594
\$5,000 to \$9,999	83,649	52,113	135,762	175,258	20,022	195,280	331,042
\$2,500 to \$4,999	59,317	48,909	108,226	198,987	24,661	223,648	331,874
Less than \$2,500	69,700	65,549	135,249	420,877	55,527	476,404	611,653
Total	1,039,255	286,098	1,325,353	1,029,573	121,414	1,150,987	2,476,340
Distribution of occupation:							
\$500,000 or more	81.1	7.6	88.7	10.1	1.2	11.3	100.0
\$200,000 to \$499,999	85.7	5.8	91.5	7.7	.8	8.5	100.0
\$100,000 to \$199,999	86.7	5.3	92.0	7.3	.7	8.0	100.0
\$40,000 to \$99,999	82.7	6.8	89.5	9.6	.9	10.5	100.0
\$20,000 to \$39,999	64.5	11.4	75.9	22.2	1.9	24.1	100.0
\$10,000 to \$19,999	44.3	15.3	59.6	37.0	3.4	40.4	100.0
\$5,000 to \$9,999	25.3	15.7	41.0	52.9	6.1	59.0	100.0
\$2,500 to \$4,999	17.9	14.7	32.6	60.0	7.4	67.4	100.0
Less than \$2,500	11.4	10.7	22.1	68.8	9.1	77.9	100.0
Total	42.0	11.5	53.5	41.6	4.9	46.5	100.0
Distribution of age by occupation:							
\$500,000 or more	91.4	8.6	100.0	89.6	10.4	100.0	--
\$200,000 to \$499,999	93.7	6.3	100.0	90.7	9.3	100.0	--
\$100,000 to \$199,999	94.2	5.8	100.0	91.0	9.0	100.0	--
\$40,000 to \$99,999	92.4	7.6	100.0	91.8	8.2	100.0	--
\$20,000 to \$39,999	85.0	15.0	100.0	92.1	7.9	100.0	--
\$10,000 to \$19,999	74.3	25.7	100.0	91.6	8.4	100.0	--
\$5,000 to \$9,999	61.6	38.4	100.0	89.7	10.3	100.0	--
\$2,500 to \$4,999	54.8	45.2	100.0	89.0	11.0	100.0	--
Less than \$2,500	51.5	48.5	100.0	88.3	11.7	100.0	--
Total	78.4	21.6	100.0	89.5	10.5	100.0	--

-- = not applicable.

Source: 1978 Census of Agriculture, Vol. 1, Part 31, pp. 40-41.

for all farms would increase from \$17.7 billion to \$20.7 million, a 17-percent increase (table 6). Farm operators with sales of less than \$5,000 accounted for 48 percent of off-farm income in 1981. By excluding the \$18.8 billion of off-farm income of small farm operators, the total income of farm operator families would decline from \$64.4 billion to about \$46.5 billion, a 28-percent decrease.^{4/}

Landlords

Separating farm proprietors' income between operators (returns to operators) and landlords (rent) provides income statements for two diverse groups of farm sector participants whose current income and financial conditions probably differ markedly. However, the USDA net farm income concept may overstate the difference between farm proprietors and landlords and mislead the interpretation of the benefits of the income originating in the farming sector. Many landlords may be retired farmers who are currently realizing benefits from their past farming efforts as rent or sales of farmland and machinery. Farm rent, perhaps, should be estimated for two farm landlord groups, retired farmers and all other landlords, to monitor better the benefits realized from farming by retired as well as current farm operators. Some landlords may receive the bulk of their income from farm rent and are more dependent upon farming than farmers whose primary occupation is not farming.

Implications and Conclusions

The negative bias contained in the USDA estimates of income earned by farm operators from farm sources may be eliminated by: (1) shifting farm wages earned by farm operators and their families from working on their farms, and (2) moving interest received by farm operators from other farm operators from the off-farm income category to the farm income category. The income measure, total income of farm families from farm and nonfarm sources, would not be affected in magnitude by the shift. However, income from farmland sales and farm vehicle and machinery sales are not included in USDA's income from farm sources series or in the off-farm income series. Two income sources of farm operator families, labor income earned on another farm and interest received on farm financial assets, are difficult to classify as farm income, income earned from farm-related sources, or off-farm income. Small farms with sales of agricultural products of less than \$5,000 distort aggregate measures of farm sector well-being.

Returns to operators in 1979 increased 20 percent, income from farm sources rose 33 percent, off-farm income declined 56 percent, and total income of farm operator families dropped 12 percent--all based on the changes in income definitions and the shift to primary occupation data

^{4/} Includes the minus \$3-billion returns to operators and \$2.1-billion income from renting farmland and the imputed rental value of operators dwellings.

Table 6--Returns to operators, by value of sales class,
including and excluding farms with sales of less than \$5,000 ^{1/}

Item	1978	1979	1980	1981
	<u>Million dollars</u>			
Sales:				
\$200,000 and over	14,392	18,798	15,083	18,961
\$100,000 to \$199,999	4,679	5,576	2,682	3,174
\$40,000 to \$99,999	4,636	4,623	1,057	1,206
\$20,000 to \$39,999	1,015	695	-652	-717
\$10,000 to \$19,999	143	-66	-795	-861
\$5,000 to \$9,999	-362	-527	-1,007	-1,097
Less than \$5,000	-2,473	-2,380	-2,807	-2,999
Returns to operators:				
Total, all farms including farms with sales of less than \$5,000	22,031	26,719	13,561	17,663
Total, all farms excluding farms with sales of less than \$5,000	24,504	29,099	16,368	20,662
	<u>Percent</u>			
Difference in total returns	11.2	8.9	20.7	17.0

^{1/} For illustrative purposes only. Further analysis and data collection are recommended. Detailed cash receipt and expenses data are not available by primary occupation for each value of sales class.

Source: U.S. Dept. of Agriculture, Economic Research Service, Economic Indicators of the Farm Sector, Income and Balance Sheet Statistics, 1981, ECIFS T-1, tables 47-50, pages 71-74.

discussed in this paper (table 7). Income from farm sources is probably understated more than the 35 percent indicated in table 7 because interest received from farm financial assets on hand are probably understated and the gap between FPES and USDA interest may be widening. Sales of farm machinery and wages paid to operators and family members for working on their own farm are also not considered in table 7 because data are not available. Taxation of farmland at its agricultural rather than its market value was also not considered in table 7.

The income received from farm sources series is estimated by USDA for current operators only. The income received by retired farmers from farm-related sources such as rent, farmland and machinery sales, and interest should also be measured by USDA to monitor better the benefits realized from

Table 7--Summary of impacts created by shifts in income definitions and primary occupation, 1979 ^{1/}

Item	Returns to operators	Income from farm sources	Off-farm income of farm operator families	Total income of farm operator families
Million dollars				
Total income, all farms including farms with sales of less than \$5,000	26,719	32,347	33,782	66,129
Plus: Total income adjustments ^{2/}	2,938	10,182	-2,202	7,980
Less: Income of farms with sales of less than \$5,000	^{3/} -2,380	-668	16,878	16,210
Equals: Adjusted total income, all farms including farms with sales of less than \$5,000	32,037	43,197	14,702	57,899
Percent				
Difference in income caused by--				
Changes in farm income definitions ^{2/}	11.0	31.4	-6.5	12.1
Excluding farms with sales of less than \$5,000	^{3/} 8.9	2.1	-50.0	-24.5
Total difference	19.9	33.5	-56.5	-12.4

^{1/} For illustrative purposes only. Further analysis and data collection is recommended.

^{2/} From table 2. ^{3/} From table 6.

farming by retired as well as current farm operators. Perhaps two separate income from farm sources series are required for current operators and retired farmers since their income and financial conditions probably differ markedly.

Off-farm income is often cited by farm financial analysts as a cushion against adverse farm income and financial developments. Off-farm income, if it is found to contain substantial farm-related income, may actually depend on farm sector developments. The fact that small farmers account for about half of off-farm income also supports the supposition that off-farm income does not provide the degree of protection against adverse farm income and financial developments as implied by aggregate all-farm statistics based on current USDA farm income concepts.

Major conceptual revisions have been initiated in existing farm surveys to address the issues analyzed in this paper.

However, improvements in the USDA farm economic accounts cannot be made quickly because of the time involved for data collection. For example, data collected in the 1979 Agriculture Census of Farm Finance, in response to data gaps identified at the 1977 Workshop of Farm Sector Financial Accounts, were not published until July 1982. The questionnaire for the 1982 Census of Agriculture had to be completed before the results of the 1978 Census of Agriculture could be fully analyzed for farm income estimation and distribution. Again, this is a normal time lag.

A review was also completed of the annual Farm Production Expenditure Survey by SRS and ERS to obtain data on many of the conceptual issues analyzed in this paper. An advantage of the FPES is that it is an annual survey, but its relatively small sample size (about 7,900 usable responses) makes statistical validity less reliable than desired for items not reported by all farmers; land purchases and machinery leasing, for example, are reported by only 2 to 3 percent of all farmers.

Farm income is estimated by USDA as returns to operators, income from farm sources, and total income of farm operator families. Income concepts were reviewed, identifying how certain farm-related income is included in off-farm income and how other farm-related income is not included in either the income from farm sources series or the total income of farm families series. Because data are limited or nonexistent, the importance of the income concepts and data gaps cannot be fully determined at this time. Statistical improvement of current USDA farm income data and measures, primarily the income from farm sources series, will be a lengthy process.

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How Does USDA Report the Cost of Farming?

Cole Gustafson*

ERS reports that the 1981 costs of production increased 14.6 percent (simple average of 11 major crops), and that farm production expenses used in the calculation of net farm income were up 8 percent. However, the Farm Production Expenditures Survey (FPES) conducted by USDA's Statistical Reporting Service (SRS) indicated costs increased only 1.5 percent. At first, the differences in the three series--the costs of production series, the farm production expenses series, and the FPES--seem contradictory, but the three series are not identical. Each has a special purpose and use. This paper analyzes the methodologies used to estimate the three costs of farming series and explains their conceptual and definitional differences.

THE FARM PRODUCTION EXPENDITURES SURVEY

Farm production expenditures collected by SRS in the annual FPES include all expenditures for current operating expenses and capital expenditures for farm machinery, vehicles, and buildings. Expenditures applicable to both farm production and family living, such as gasoline expenses, are allocated by the respondent by reporting either a dollar value or a percentage for the farm share. The FPES information is based on a sample survey of about 7,900 usable responses from farms and ranches. For survey purposes, a farm is defined as any establishment producing agricultural commodities with annual sales of \$1,000 or more. Types of establishments included in the survey are those listed in the Federal Government Standard Industrial Code (SIC) for agricultural production of crops and livestock, major group codes 01 and 02.^{1/} Establishments engaged primarily in the production of field crops, vegetables, fruits, nuts, and horticultural specialties are included in the SIC 01 crops sector. SIC 02 livestock includes the production of cattle, hogs, sheep, goats, horses, poultry and eggs, turkeys, milk, and honey. Also included are other animal specialties such as production of rabbits, fur-bearing animals, and fish raised on farms.

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^{1/} Type of farm data reported in the Census of Agriculture matches the SIC farm definitions.

FARM PRODUCTION
EXPENSES IN
THE NET FARM
INCOME ACCOUNTS

Data collected in the FPES are supplemented with other information by ERS to estimate farm production expenses for the net farm income series (table 1). The USDA farm income accounts treat agriculture as a single large farm. Therefore, certain transactions among farmers are not measured in the income accounts since they cancel within the farm sector. For example, in the case of farm rents, only net rent paid to non-farm landlords is included as an expense. Rents paid to farm operators are not included in farm production expenses because they would offset items of income and cost for farm operators as a group.^{2/}

Gross capital expenditures included in FPES data are not directly entered into farm production expenses to estimate net farm income. Instead, capital consumption allowances are estimated and included in farm production expenses. The capital consumption account within the farm production expense series is the estimated outlay, in current prices, which would be required if farmers were to replace the plant and equipment used during the year. Estimates are based on current replacement costs, not original costs. If gross capital expenditures reported in the FPES are less than capital consumption or depreciation reported in the net farm income accounts, then farmers as a group have delayed necessary replacements and have used up a part of their capital.

COSTS OF PRODUCTION

Costs of production indicators differ significantly from both ERS production expenses and SRS farm expenditures. Production expenses and expenditures are aggregated at the national and State level, but costs of production for the major crop and livestock commodities are reported per acre and per production unit such as bushels, hundredweight (cwt), or pounds. Because of the detail, estimates are only done for the major crop and livestock commodities.

Costs of production are on a crop year basis. ERS farm production expenses and SRS farm expenditures are assessed for a calendar year. Thus, if an operator makes a purchase of an input late in the year for the following year's production, the costs of production estimates would account for the purchase in the following year's production. Both the farm production expenses and expenditure series would account for the purchase in the current calendar year.

Costs of production include economic opportunity costs which are excluded from ERS farm production expenses and SRS farm expenditures. In costs of production budgets, all factors of production are valued whether they are purchased or not. For instance, the operator usually provides a significant portion

^{2/}Under the new income measures developed and published by USDA in 1980, net rent paid to all landlords is charged to farm production expenses to estimate "returns to operators." Net rent received by operator landlords is then credited to "income from farm sources."

Table 1--Comparison of USDA production expense data

Item	Farm Production Expenditures Survey	Farm production expenses	Enterprise costs of production
Purchased variable inputs:			
Seed, feed, livestock and poultry purchases, fertilizer and lime, agricultural chemicals, fuel and energy, property taxes, interest, customwork, leasing, hired transportation, building and machinery repairs	X	X	X
Farm produced inputs <u>1/</u>			X
Wages and contract labor:			
Cash wages	X	X	X
Contract labor	X	X	X
Noncash food and housing perquisites	X	X	X
Imputed charge for operators' labor			X
Rent:			
Gross share rent	X		
Gross cash rent	X		
Net rent <u>2/</u>		X	X
Imputed charge for land owned by operators			X
Machinery and buildings:			
Capital expenditures	X		
Depreciation and accidental damage <u>3/</u>		X	X
Imputed charge for machinery and equipment owned by operators			X
Management:			
Paid to managers	X	X	X
Imputed charge for management performed by operators			X

X = included.

1/ A cost is imputed at current market value for unsold seed, feed, dairy, and breeding livestock used on the farm where produced.2/ Gross share and cash rents received by landlords less expenses paid by landlords.3/ Referred to as replacement in the costs of production series.

of the required labor. The value of total labor required is estimated for the production of a specific commodity based on the amount of time needed to perform the machinery operations and is multiplied by the current wage rate. Hired labor is subtracted, which leaves an imputed return for operator's labor. The concept of valuing all inputs is also followed in imputing a return to operators' invested capital and land.

Rarely are costs recorded at the enterprise or commodity level by farmers. Engineering relationships are used to estimate costs of production along with basic accounting procedures. Overhead items such as telephone, recordkeeping, and general farm maintenance expenses included in the farm production expenses account are allocated to the enterprise level, based on the value of each commodity sold.

SUMMARY

These basic methodological differences lead to differences in the amount of costs reported and rates of increase. Differences also evolve because certain groups of farmers fare better at different times due to basic supply and demand relationships. For these reasons, it is inappropriate to rely on any single cost of farming indicator for farm income analysis.

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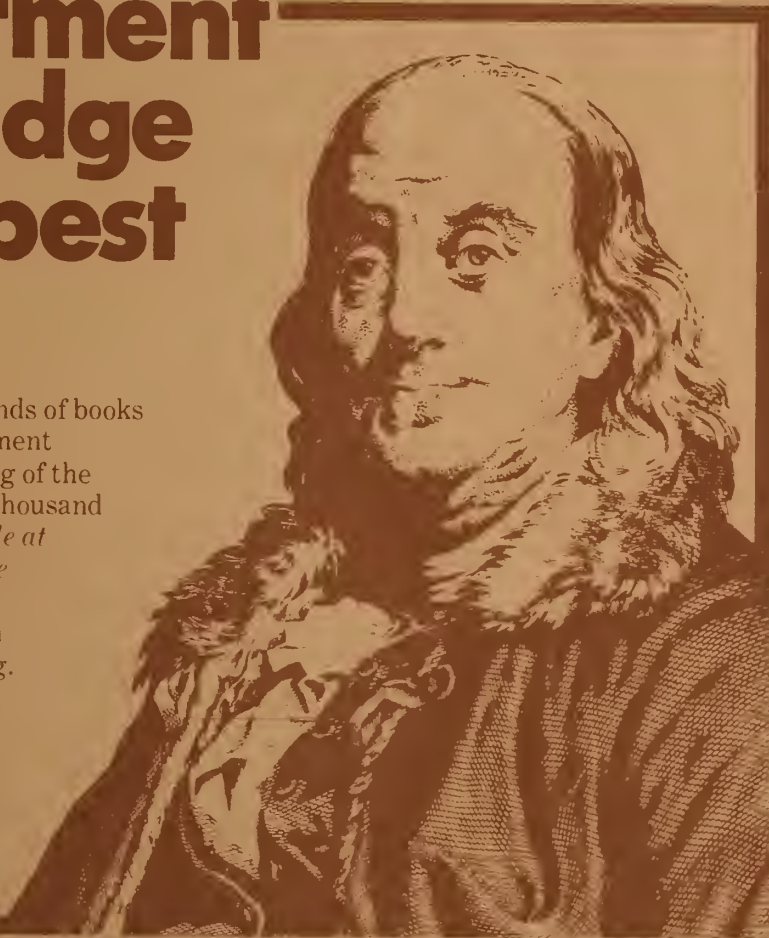
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